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Kalendarium Hortense:

OR, THE

GARD'NERS ALMANAC,

DIRECTING

What he is to do *Monthly* throughout the *Year.*

AND

What *Fruits* and *Flowers* are in *Prime.*

To which is *Added*, a Discourse of *Earth*, Relating to the *Culture* and *Improvement* of it for Vegetation, and the Propagation of *Plants*, *&c.*

The Sixth Edition, *with many useful* Additions.

By JOHN EVELYN Esq;
Fellow of the *Royal Society.*

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TO

Abraham Cowley Esq;

SIR,

THIS *Sixth Edition* of my *Hortulan Kalen-* is Yours, mindful of the nour once conferr'd on it, en you were pleas'd to ſu- end your nobler *Raptures*, d think it worthy your *tran- ribing*. It appears now with me *advantages* which it en wanted; becauſe it had ot *that* of publiſhing to the *orld*, how infinitely I mag- fie your *contempt* of (not to y *revenge* upon) it; whilſt

you ſtill continue in the *poſ-*
ſeſſion of your *Self*, and of
that *repoſe* which few men
underſtand, in exchange for
thoſe *pretty miſeries* you have
eſſay'd : O the ſweet *Even-*
ings and *Mornings*, and all
the *Day* beſides which are
yours,

——*while* Cowley's *made*
The happy Tenant of the
Shade.

And the *Sun* in his *Garden*,
gives him all he deſires, and
all that he would enjoy : the
purity of viſible Objects, and
of true *Nature* before ſhe
was vitiated by Impoſture or
Luxury !

Books,

---Books, wise Discourse, Gardens, and Fields,
And all the Joys that unmixt Nature yields.

Misc.

You gather the first *Roses* of the *Spring*, and *Apples* of *Autumn*: And as the *Philosopher* in *Seneca* desired only *Bread* and *Herbs* to dispute felicity with *Jupiter*; You vie happiness in a *thousand* easie and sweet Diversions; not forgetting the innocent *Toils* which You cultivate; the *Leisure* and the *Liberty*, the *Books*, the *Meditations*, and above all, the learned and choice *Friendships* that you enjoy: Who would not, like

Primus vere rosam atque autumno carpere poma.

You, Cacher sa vie? 'Twas the wise *Impress* of *Balzac*, and of *Plutarch* before him, You give it *lustre* and *interpretation*: I swear to you, Sir, it is what in the World I most inwardly breathe after, and pursue, not to say that I envy Your *felicity*, deliver'd from the gilded *impertinencies* of life, to enjoy the moments of a solid and pure *Contentment*; since those who know how *usefully* You imploy this glorious *Recess*, must needs be forc'd either to *imitate*, or, as I do, to *celebrate* Your *Example*.

J. EVELYN.

IN-

INTRODUCTION TO THE KALENDAR.

AS Paradiſe (*though of* Gods *own* Planting) *was no longer* Paradiſe *than the* Man *was put into it, to* dreſs it, and to keep it; *ſo, nor will our* Gardens (*as near as we can contrive them to the reſemblance of that bleſſed abode*) *remain long in their* perfection, *unleſs they are alſo continually* cultivated. *But when we have ſo much celebrated the life and felicity of an excellent* Gard'ner, *as to think it preferable to all other diverſions whatſoever; it is not becauſe of the* leiſure *which he enjoys above other men; caſe and opportunity which miniſter to vain and inſignificant delights; ſuch as* fools *derive from ſenſual* Gen. 2.15.

ſenſual objects: We dare boldly pronounce it, there is not amongſt Men *a more laborious life than is that of a good* Gard'ner's; *but becauſe a labour full of* tranquillity *and* ſatisfaction; Natural *and* Inſtructive, *and ſuch as (if any) contributes to* Piety *and* Contemplation, Experience, Health, *and* Longævity, munera nondum intellecta Deûm. *In ſum, a condition it is, furniſhed with the moſt innocent, laudable, and pureſt of earthly felicities, and ſuch as does certainly make the neareſt approaches to that* bleſſed ſtate, *where only they enjoy all things without pains; ſo as thoſe who were led only by the light of* Nature, *becauſe they could phanſie none more glorious, thought it worthy of entertaining the* Souls *of their departed* Heroes, *and moſt Illuſtrious of Mortals.*

But to return to the Labour, *becauſe there is nothing* excellent

which

which is to be attained without it: *A* Gard'ners *work is never at an end; It begins with the* Year, *and continues to the* next: *He prepares the* Ground, *and then he* Sows *it; after that he* Plants, *and then he gathers the* Fruits; *but in all the intermedial spaces he is careful to dress it; so as* Columella, *speaking of this continual assiduity, tells us,* *A* Gard'ner *is not only to reckon upon the loss of bare* twelve hours, *but of an whole* Year, *unless he perform what is at the present requisite in its due period; and therefore is such a* Monthly *notice of his task as depends upon the* Signs *and* Seasons, *highly necessary.*

Prætermissas duodecim horas, *sed* annum *periisse, nisi sua quaque quod instat effecerit. Quare, necessaria est* Menstrui *cujusq; officii monitio ta, quæ pendet ex variatione* Syderum Cœli, &c. *Col. R. R. l.* IX.

Gard'ners had need each *Star* as well to know
The *Kid*, the *Dragon*, and *Arctūrus* too,
As *Sea-men*, who through dismal storms are wont
To pass the Oyster-breeding *Hellespont.*

——tam sunt Arcturi Syderа nobis
Hædorumque dies servandi, & lucidus Anguis;
Quam quibus in patriam ventosa per æquora vehis,
Pontum, & Ostrifери fauces tentantur Abydi, Geor. I.

All

All which duly weighed, how precious *the* time *is, how precipitous the* occasion, *how many things to be done in their just* season, *and how intolerable a confusion wil succeed the smallest* neglect, *after once a* Ground *is in order, we thought we should not attempt an unacceptable* Work, *if* here *we endeavoured to present our* Gard'ners *with a compleat* Cycle *of what is requisite to be done throughout every* Month *of the* Year: *We say, each* Month; *because by dividing it into* Parts *so distinct, the* Order *in which they shall find each particular to be disposed, may not only render the* Work *more facile and delightful; but redeem it from that extreme perplexity, which for want of a constant and uniform* Method, *we find does so universally distract the vulgar sort of Them: They know not (for the most part) the* seasons *when* things *are to be* * *done; and when at any time they come*

* *Quia caput est in omni negotio nosse quid agendum sit,* &c. Col. l. 1. c. 1.

come to know, there often falls out so many things to be done on the ſudden, that ſome of them muſt of neceſſity be neglected for that *whole* Year, *which is the greateſt detriment to this* Myſtery, *and frequently irrecoverable.*

We are yet far from impoſing (by any thing we have here alledged concerning theſe Menſtrual Periods) *thoſe nice and* hypercritical *Puntillo's which ſome* Aſtrologers, *and ſuch as purſue their* Rules, *ſeem to oblige our* Gard'ners *to; as if, forſooth, all were loſt, and our pains to no purpoſe, unleſs the* Sowing *& the* Planting, *the* Cutting *and the* Pruning, *were performed in ſuch and ſuch an exact* minute *of the* Moon: In hac autem Ruris diſciplina non deſideratur ejuſmodi ſcrupuloſitas. *There are indeed ſome certain* ſeaſons, *and* ſuſpecta tempora, *which the prudent* Gard'ner *ought carefully (as much as in him lies) to prevent: But as to*

Col. de R. R. lib. 9. cap. 364.

to the rest, let it suffice, that he diligently follow the Observations *which (by great* Industry*) we have* collected *together, and* here *present him, as so many* Synoptical Tables *calculated for his* Monthly *use, to the end he may pretermit nothing which is under his* Inspection, *and is* necessary, *or distract his* thoughts *and* Employment *before the* Seasons *require it.*

And now, however This *may seem but a* Trifle *to some who esteem* Books *by the* bulk, *not the* benefit; *let them forbear yet to* despise *these few ensuing* Pages: *For never was any thing of this* pretence *more fully and ingenuously imparted; I shall not say to the* regret *of all our* Mercenary Gard'ners, *because I have much obligati*ō *to some above that* Epithete; M*r* Rose, Gard'ner *to his* Majesty, and *lately at* Essex-house *to her* Grace *the* Dutchess *of* Somerset; *and* M*r* Turner, *formerly of* Wimbleton *in* Surrey;

who

who being certainly amongſt the moſt expert *of their* Profeſſion *in* England, *are no leſs to be* celebrated *for their free* Communications *to the* Publick, *by divers* Obſervations *of theirs, which have furniſhed to this* Deſign. *And it is from the* Reſult *of very much* Experience, *and an extraordinary inclination to cheriſh ſo innocent and laudable a* Diverſion, *and to incite an* Affection *in the* Nobleſs *of this* Nation *towards it, that I* begin *to* open *to them ſo many of the interior* Secrets, *and moſt precious* Rules *of this* Myſterious Art, *without* Impoſture, *or invidious* Reſerve. *The very* Catalogue *of* Fruits *and* Flowers, *for the* Orchard *and the* Parterre, *will gratifie the moſt innocent of the* Senſes, *and whoever elſe ſhall be to ſeek a rare and univerſal* choice *for his* Plantation.

Touching the Method, *it is ſo obvious, that there needs no farther direction*;

direction; and the Consequent *will prove so certain, that a* Work *of the* busiest *pains is by this little* Instrument *rendred the most facile and agreeable, as by which you shall continually preserve your* Garden *in that perfection of* beauty *and* lustre, *without* confusion *or* prejudice. *Nor indeed could we think of a more comprehensive* Expedient, *whereby to assist the frail and torpent* Memory *through so* multifarious *and numerous an* Employment *(the daily* subject *of a* Gard'ners *care) than by the* Oeconomy *and* Discipline *which we have here consigned to it, and which our Industrious* Gard'ner *may himself be continually* Improving *from his own* Observations *and* Experience. *In the mean time, we have at the instance of very many* Persons, *who have been pleased to acknowledge the* effects *of a former less perfect* Impression, *thought good to publish this* sixth Edition

in

in a ſmaller Volume, *that as an* Enchiridion *it may be the more ready and uſeful; but the* Kalendar *might be conſiderably augmented, and recommend it ſelf to more* Univerſal uſe, *by taking in the* Monthly Employments *of all the parts of* Agriculture, *as they have been begun to us in* Columella, Palladius, de Serres, Auguſtino Gallo, Vincenzo Tanara, Herrera, *our* Tuſſer, Markham, *and others; eſpecially if* well *and* judiciouſly *applied to the* Climate *and ſeveral* Countries : *but it were here beſides our* Inſtitution, *nor would the* Pages *contain them; what is yet found* vacant *has been* purpoſely *left, that our* Gard'ner *may ſupply as he finds cauſe; for which reaſon likewiſe we have rang'd both the* Fruits *and* Flowers *in* Prime *after ſomewhat a* promiſcuous *Order, and not after the* Letters *of the* Alphabet, *that the* Method *might be purſu'd with*

Col. de R. R. lib. 11. c. 11. *Pall.* lib. 1. Tit. 1.

the least disorder. *Lastly,*

The Fruits *and* Flowers *in* Prime *are to be as well considered in relation to their* lasting *and* continuance, *as to their* maturity *and* beauty.

J. E.

Kalenda-

Kalendarium Hortense.

JANUARY.

Hath xxxi days, long—8h—0m

Sun rises 8h—0m—Sets 4h 0m

Note, that for the Rising and Setting of the Sun, & Length of the days I compute from the first of every Month, London Lat.

To be done

In the *Orchard*, and *Olitory-Garden.*

Trench the Ground, and make it ready for the *Spring*: prepare also *Soil*, and use it where you have occasion: Dig *Borders*, *&c. uncover* as yet *Roots* of *Trees*, where *Ablaqueation* is requisite.

Plant *Quick-sets*, and Transplant *Fruit-Trees*, if not finish'd:

Jan. Olit.
* *See Mr.* Roſes *Vineyard vindicated* cap. 5.

Set* *Vines*, and begin to *prune* the *old*: *Prune* the branches of *Orchard Fruit-trees*; eſpecially the long planted, and that towards the *decreaſe*: but for ſuch as are newly planted, they need not be diſbranched till the *Sap* begins to ſtir, that ſo the wound may be healed with the *Scar*, and *Stub*, which our froſts do frequently leave: In this work cut off all the ſhoot of *Auguſt*, unleſs the nakedneſs of the place incline you to ſpare it: *Conſult my* French Gardner, *part* 1. *ſect.* 3. for this is a moſt material Addreſs: You may now begin to *Nail* and trim your *Wall-fruit*, and *Eſpaliers*.

Cleanſe *Trees* of *Moſs*, *&c.* the *Weather* moiſt.

Gather *Cyons* for *Graffs* before the *Buds* ſprout; and about the latter end *graff* them in the *Stock*, *Pears*, *Cherries*, and *Plums*, and remove your *Kernel-ſtocks* to more commodious diſtances in your *Nurſery*,

Nursery, cutting off the * *Top root.* Set *Beans*, *Peaſe*, &c. *Jan. Olit.* * Vide *March.*

Sow alſo (if you pleaſe) for early *Cauly-flowers.*

Sow *Chervil*, *Lettuce*, *Radiſh*, and other (more delicate) *Sallets*; if you will raiſe in the *Hot-bed.*

In over-wet, or hard weather *cleanſe*, *mend*, *ſharpen*, and prepare *Garden Tools.*

Turn up your *Bee-hives*, and ſprinkle them with a little warm and ſweet *Wort*; do it dextrouſly.

Fruits in *Prime*, and yet *laſting.*

Apples.

KEntiſh Pepin, *Ruſſet Pepin*, *golden Pepin*, *French Pepin*, *Kirton Pepin*, *Holland Pepin*, *John-Apple*, winter *Queening*, *Marigold*, *Harvey Apple*, *Pome-water*, *Pomeroy*,

Jan. Olit. *roy*, *Golden-Doucet*, *Reineting*, *Lones-Pear-main*, Winter-*Pear-main*, *&c.*

Pears.

Winter-*Musk* (bakes well) Winter-*Norwich* (excellently baked) Winter-*Bergamot*, Winter-*Bon-crestien*, both *Mural*, the great *Surrein*, *&c.*

JANUARY

♒

JANUARY

Hath xxxi days, long—8h—0m

Sun rises 8h—0m Sets 4h—0m

To be done

In the *Parterre*, and *Flower-Garden.*

SEt up your *Traps* for *Vermine*; especially in your *Nurseries* of *Kernels* and *Stones*, & amongst your *bulbous Roots*: About the middle of this *Month*, plant your *Anemony roots*, and *Ranunculus's*, which you will be secure of, without *covering*, or farther trouble: Preserve from too great, and continuing *Rains* (if they happen) *Snow*, and *Frost*, your choicest *Anemonies*, and *Ranunculus's*

Jan. Part. ſow'd in *September* or *October* for earlier *Flowers*: Alſo your *Carnations*, and ſuch *Seeds* as are in peril of being waſh'd out, or over-*chill'd* and *frozen*; covering them under *ſhelter*, and ſtriking off the *Snow* where it lies too weighty; for it certainly rots, and burſts your early-ſet *Anemonies* and *Ranunculus*'s, &c. unleſs planted now in the *Hot-beds*; for now is the *Seaſon*, and they will *flower* even in *London*. Towards the *end*, earth-up, with freſh and light mould, the *Roots* of thoſe *Auriculas* which the *Froſts* may have uncover'd; filling up the *chinks* about the ſides of the *Pots* where your choiceſt are ſet: but they need not be *hous'd*; it is a hardy Plant.

Flowers

Flowers in *Prime*, or yet *laſting*.

WInter *Aconite*, ſome *Anemonies*, Winter *Cyclamen*, Black *Hellebor*, *Brumal Hyacinth*, *Oriental Jacinth*, *Levantine Narciſſus*, *Hepatica*, *Primroſes*, *Laurustinus*, *Mezereon*, Præcoce *Tulips*, *&c.* eſpecially, if raiſed in the *Hot-bed*.

Note,

That both theſe *Fruits*, and *Flowers*, are more *early*, or *tardy*, both as to their prime *Seaſons* for *eating*, and perfection of *blowing*, according as the *Soil*, and *Situation* are qualified by *Nature*, or *Accident*.

Note alſo,

That in this *Recenſion* of *Monthly Flowers*, it is to be underſtood for the *whole* period that any *Flower* continues, from its firſt *appearing*, to its final *withering*.

FEBRU-

Feb. Part.

♓

FEBRUARY

Hath xxviij days, long—09h—24m

Sun rises 07h—13m Sets 04h—45m

To be done

In the *Orchard*, and *Olitory-Garden.*

PRune *Fruit-Trees*, and *Vines* as yet; for now is your Season to *bind*, *plash*, *nail*, and *dress*, without danger of *Frost*: *This* to be understood of the most tender and delicate *Wall-fruit*, not finish'd before; do this before the *Buds* and *Bearers* grow turgid; and yet in the *Nectarine* and like delicate Mural Fruit, the later your *Pruning*, the better, whatever has been, and still is, the

the contrary cuſtom. Remove *Graffs* of former years *Graffing*. Cut, and lay *Quick ſets*; and *trim* up your *Paliſade Hedges*, and *Eſpaliers*. Plant *Vine* as yet, other *Shrubs*, *Hops*, *&c.* Feb. Olit.

Set all ſorts of *Kernels* and *ſtony-Seeds*. Alſo ſow *Beans*, *Peaſe*, *Rounſevals*, *Corn-ſallet*, *Marigold*, *Anie-ſeed*, *Radiſh*, *Parſneps*, *Carrots*, *Onions*, *Garlick*, *&c.* and plant *Potatoes* in your worſt ground.

Now is your Seaſon for *Circumpoſition* by *Tubs* or *Baskets* of *Earth*, and for laying of *Branches* to take root. You may plant forth your *Cabbage-plants*.

Rub *Moſs* off your *Trees* after a ſoaking *Rain*, and ſcrape, and cleanſe them of *Cankers*, *&c.* draining away the *wet* (if need require) from the too much moiſtned *Roots*, and earth up thoſe *Roots* of your *Fruit-trees*, if any were uncovered. Cut off the

Webbs

Feb. Olit. *Webs* of *Caterpillars*, &c. from the tops of *Twigs* and *Trees*) to burn. Gather *Worms* in the *Evenings* after *Rain*.

Kitchin-Garden Herbs may now be planted, as *Parsly*, *Spinage*, and other hardy *Pot Herbs*. Towards the *middle*, or *latter end* of this *Month*, till the *Sap* rises briskly, *graff* in the *Cleft*, and so continue till the last of *March*; they will hold, *Apples*, *Pears*, *Cherries*, *Plums*, &c. the *New Moon*, and the *Old Wood* is best. Now also plant out your *Caully flowers* to have early; and begin to make your *Hot-bed* for the first *Melons* and *Cucumbers* to be sow'd in the Full; but trust not altogether to them. Sow *Asparagus*. Lastly,

Half open your *passages* for the *Bees*, or a little before (if *weather* invite;) but continue to feed weak *Stocks*, &c.

Fruits

Fruits in *Prime*, or yet *lasting.*

Apples.

Kentish, *Kirton*, *Russet*, *Holland Pepins*; *Deux-ans*, Winter *Queening*, *Harvey* sometimes, *Pome-water*, *Pome-roy*, *Golden-Doucet*, *Reineting*, *Lones Pearmain*, Winter *Pearmain*, &c.

Pears.

Bon-Chrestien of Winter, Winter *Poppering*, Little *Dagobert*, &c.

FEBRU-

♓

FEBRUARY

Hath xxviij days, long —09h—24m

Sun rises 07h—13m Sets 04h—45m

To be done

In the *Parterre*, and *Flower-Garden.*

COntinue *Vermine Traps*, *&c.* Sow *Alaternus* Seeds in *Cases*, or *open Beds*; cover them with *Thorns*, that the *Poultry* scratch them not out. Sow also *Lark-Spurs*, *&c.*

Now and then *air* your hous'd *Carnations*, in *warm* days especially, and mild *showers*; but if like to prove *cold*, set them in again at night.

Furnish (now towards the end) your

your *Aviaries* with *Birds* before they couple, *&c.* Feb. Part.

Flowers in *Prime*, or yet *lasting.*

WInter *Aconite*, single *Anemonies*, and some double, *Tulips Præcoce*, *Hyacinthus Stellatus*, *Vernal Crocus*, Black *Hellebore*, single *Hepatica*, *Persian Iris*, *Leucoium bulbosum*, *Dens Caninus* three leav'd, *Vernal Cyclamen* white and red, *Mezereon*, *Ornithogal. max. alb.* Yellow *Violets* with large leaves, early *Daffodils*, *&c.*

MARCH

V

MARCH

Hath xxxj days, long—11h—22m

Sun rises 06h—19m Sets 05h—41m

To be done

In the *Orchard*, and *Olitory-Garden.*

YEt *stercoration* is seasonable, and you may plant what *Trees* are left, though it be something of the latest, unless in very backward, or *moist* places.

Now is your chiefest and best time for raising on the Hot-bed *Melons*, *Cucumbers*, *Gourds*, *&c.* which about the *sixth*, *eighth*, or *tenth* day will be ready for the Seeds; and eight days after *prick* them forth at distances, according

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ing to the *Method*, &c. *Mar. Olit.*

If you will have them *later*, begin again in ten or twelve dayes after the first; and so a third time, to make *Experiments*. Remember to preserve the *Hot-bed* as much as possible from *Rain*; for cool him you may easily, if too violent, but not give it a competent heat, if it be spent, without new-making.

Graff all this *Month*, beginning with *Pears*, and ending with *Apples*, unless the *Spring* prove extraordinary forwards.

Now also plant *Peaches* and *Nectarines*, but cut not off the *top-roots*, as you do of other Trees; for 'twill much prejudice them: Prune last years *Graffs*, and cut off the *heads* of your *budded Stocks*. Take off the *Littier* from your Kernel-beds; see *Octob.* or you may forbear till *April*.

You may as yet cut *Quick-sets*, and cover such *Tree-roots* as

Mar. Olit. you laid bare in *Autumn.*

It were profitable now also to *top* your *Rose Trees* a little with your Knife, near a *leaf bud*, and to prune off the dead and withered branches, keeping them lower than the custom is, and to a single *Stem.*

Slip, and Set *Sage*, *Rosemary*, *Lavender*, *Thyme*, &c.

Sow in the beginning *Endive*, *Succory*, *Leeks*, *Radish*, *Beets*, *Chard-Beet*, *Scorzonera*, *Parsnips*, *Skirrets*, *Parsly*, *Sorrel*, *Bugloss*, *Borage*, *Chervil*, *Sellery*, *Smalladge*, *Alisanders*, &c. Several of which continue many years without renewing, and are most of them to be *blanch'd* by laying them under *Littier* and earthing up.

Sow also *Lettuce*, *Onions*, *Garlick*, *Orach Purslain*, *Turneps*, (to have early) monthly *Pease*, &c. these *annually.*

Transplant the *Beet-chard* which you sow'd in *August*, to have most ample *Chards.* Sow

Sow also *Carrots, Cabbages, Cresses, Fennel, Majoran, Basil, Tobacco, &c.* And *transplant* any sort of *Medicinal Herbs.* *Mar. Olit.*

Mid-*March* dress up, and string your *Strawberry beds*, and uncover your *Asparagus*, spreading and loosning the Mould about them, for their more easie penetrating: Also may you now transplant *Asparagus* roots to make new *Beds.*

By this time your *Bees* sit; keep them close night and morning, if the weather prove ill.

Turn your *Fruit* in the Room where it lies, but open not yet the *windows.*

Fruits in *Prime*, or yet *laſting.*

Apples.

GOlden *Ducket*, [*Doucet*] *Pepins*, *Reineting*, *Lones Pearmain*, Winter *Pearmain*, *John Apple*, &c.

Pears.

. Later *Bon-Chreſtien*, Double *Bloſſom Pear*, &c.

MARCH

♈

MARCH

Hath xxxj days, long—11h—22m

Sun riſes 06h—19m Sets 05h—41m

To be done

In the *Parterre*, and *Flower-Garden.*

Take and *bind* up your weakeſt *Plants* and *Flowers* againſt the winds, before they come too fiercely, and in a moment *proſtrate* a whole *years* labour.

Plant *Box*, *&c.* in *Parterres.* Sow *Pinks*, *Sweet-williams*, and *Carnations*, from the *middle* to the *end* of this *Month.* Sow *Pine-kernels*, *Fir-ſeeds*, *Bays*, *Alaternus*, *Phillyrea*, and moſt *perennial Greens*, &c. Or you may ſtay

Mar. Part. till somewhat *later* in the *Month.* Sow *Auricula seeds* in *Pots* or *Cases*, in fine *Willow* earth, a little *loamy*; and place what you sow'd in *September* (which is the more proper Season) now in the *shade*, and *water* it.

Plant some *Anemony roots* to bear late, and successively; especially in and about *London*, where the *Smoak* is any thing tolerable; and if the *Season* be very dry, *water* them well once in *two* or *three* dayes, as likewise *Ranunculus's*. *Fibrous* roots may be *transplanted* about the middle of this *Month*; such as *Hepatica's*, *Primroses*, *Auricula's*, *Cammomile*, *Narcissus Tuberose*, *Matricaria*, *Gentianella*, *Hellebore* and other *Summer flowers*; Set *Leucoium*; Slip the *Keris* or *Wall-flower*; and towards the end, *Lupines*, *Convolvulus's*, *Spanish* or ordinary *Jasmine*. You may now a little after the *Æquinox* prune *Pine* and *Fir-trees*: See *September*.

To-

Towards the *middle*, or latter end of *March* sow on the *Hot-bed* such Plants as are late bearing *Flowers* or *Fruit* in our *Climate*; as *Balsamine*, and *Balsamum mas*, *Pomum Amoris*, *Datura*, *Æthiopic Apples*, some choice *Amaranthus*, *Dactyls*, *Geranium's*, *Hedysarum Clipeatum*, *Humble* and *Sensitive* Plants; *Lentiscus*, *Myrtle-berries* (steep'd a while) *Capsicum Indicum*, *Canna Indica*, *flos Africanus*, *Mirabile Peruian*: *Nasturtium Ind.* *Indian Phaseoli*, *Volubilis*, *Myrrh*, *Carrobs*, *Marcoc*, five *Flos Passionis*, and the like *rare* and *exotic* Plants which are brought us from *hot* Countries. Note, that the *Nasturtium Ind.* *African*, *Marygolds*, *Volubilis*, and some others, will come (though not altogether so forwards) in the *cold bed* without *Art*: But the *rest* require much, and constant *heat*, and therefore several *Hot-beds*, till the common earth be very warm *Mar. Part.*

Mar. Part. by the advance of the *Sun*, to bring them to a due stature, and perfect their *Seeds*: Therefore your choicest *Amaranthus* being risen pretty high, remove them into another temperate *Hot-bed*; the same you may do with your *African* and *Sensitive* Plants, especially, which alwayes keep under Glasses.

About the expiration of this *Month* carry into the *shade* such *Auricula's*, Seedlings, or *Plants* as are for their *choiceness* reserved in *Pots*.

Transplant also *Carnation seedlings*, giving your *Layers* fresh *earth*, and setting them in the *shade* for a *week*; then likewise cut off all the *sick* and infected *leaves*; for now you may set your choice ones out of *Covert*, as directed in *February*.

Now do the *farewel frosts* and *Easterly winds* prejudice your choicest *Tulips*, and spot them; therefore

therefore cover such with *Mats* or *Canvas* to prevent *freckles*, and sometimes destruction. The same care have of your most precious *Anemonies*, *Auricula's*, *Chamæ-iris*, *Brumal Jacinths*, early *Cyclamen*, *&c.* Wrap your shorn *Cypress* tops with straw *Wisps*, if the *Eastern blasts* prove very tedious; and forget not to cover with dry *straw* or *Pease-hame*, your young exposed *Ever greens* as yet Seedlings; such as *Fir*, *Pine*, *Phillyria*, *Bays*, *Cypress*, &c. till they have pass'd *two* or *three* years in the *Nursery*, and are fit to be *transplanted*; for the sharp *Easterly* and *Northerly* winds transpierce, and dry them up. Let this also caution you upon all such extremities of *weather*, during the whole *Winter*; but be mindful to uncover them in all benign and tolerable seasons and intermissions; it being these acute *winds*, and seldom or never the hardest *Frosts* or *Snows* which

Mar. Part.

Mar. Part. which do the mischief. About the *end* uncover even your choicer *Plants*, but with *Caution*; for the tail of the *Frosts* yet continuing, and sharp *Winds*, with the sudden darting heat of the *Sun*, scorch and destroy them in a moment; and in such *weather* neither *sow*, nor *transplant*.

Sow *Stock-gilli-flower* seeds in the *Full*, to produce double *flowers*.

Now may you set your *Oranges*, *Lemmons*, *Myrtles*, *Oleanders*, *Lentisci*, *Dates*, *Aloes*, *Amomums*, and like tender Trees and Plants in the *Portico*, or with the *windows* and *doors* of the *Greenhouses* and *Conservatories* open for eight or ten days before *April*, or earlier, if the *Season* invite, (that is, if the sharp *winds* be past) to acquaint them gradually with the *Air*; I say, gradually and carefully; for this change is the most *Critical* of the whole year; trust not

not therefore the *Nights* too confidently, unless the *weather* be thorowly setled: Now is also your season to raise *Stocks* to bud *Oranges* and *Lemmons* on, by sowing the *Seeds*; and some of the hardiest *Ever-greens* may be transplanted, especially if the weather be *moist* and temperate. Lastly, *Mar. Part.*

Bring in materials for the *Birds* in the *Aviary* to build their *Nests* withal.

Flowers in *Prime*, and yet *lasting*.

Anemonies, Spring *Cyclamen*, Winter *Aconite*, *Crocus*, *Bellis*, white and black *Hellebore*, single and double *Hepatica*, *Leucoion*, *Chamæ iris* of all colours, *Dens Caninus*, *Violets*, *Fritillaria*, *Chelidonium* small with double Flowers, *Hermodactyls*, *Tuberous Iris*, *Hyacinth Zeboin*, *Brumal*, *Oriental*,

Mar. Part. tal, &c. *Junquils*, great *Chalic'd*, *Dutch Mezereon*, *Persian Iris*, *Auricula's*, *Narcissus* with large tufts, common, double and single *Primroses*, *Præcoce Tulips*, *Spanish Trumpets* or *Junquils*; *Violets*, yellow *Dutch Violets*, *Ornithogalum max. alb. Crown Imperial*, *Grape Flowers*, *Almonds* and *Peach blossoms*, *Rubus odoratus*, *Arbor Judæ*, &c.

APRIL

♉

APRIL

Hath xxx days, long —13h—23m

Sun rises 05h—18m Sets 05h—42m

To be done

In the *Orchard*, and *Olitory-Garden.*

SOw sweet *Marjoran*, *Hyssop*, *Basil*, *Thyme*, Winter *Savory*, *Scurvey-grass*, and all fine and tender *Seeds* that require the *Hot-bed.*

Sow also *Lettice*, *Purslan*, *Cauly-flower*, *Radish*, *&c.*

Plant *Artichoke-slips*, *&c.*

Set *French Beans*, &c. And sow *Turneps* to have them early.

You may yet slip *Lavender*, *Thyme*, *Penetroyal*, *Sage*, *Rosemary*, *&c.*

Towards

April Olit. Towards the *middle* of this *Month* begin to plant forth your *Melons* and *Cucumbers*, and so to the *later end*; your *Ridges* well prepared.

Gather up *Worms* and *Snails*, after evening *showers*; continue this after all Summer rains.

Open now your *Bee-hives*, for now they *hatch*; look carefully to them, and prepare your *Hives*, *&c.*

Fruits in *Prime*, or yet *lasting*.

Apples.

Pepins, *Deuxans*, *West-berry Apple*, *Russeting*, *Gilli-flowers*, flat *Reinet*, &c.

Pears.

Later *Bon-chrestien*, *Oak Pear*, *&c.* double *Bloffom*, *&c.*

APRIL

♉

APRIL

Hath xxx days, long—13h—23m

Sun riſes 05h—18m Sets 05h—42m

To be done

In the *Parterre*, and *Flower-Garden.*

SOw divers *Annuals* to have *Flowers* all *Summer*; as double *Marigolds*, *Digitalis*, *Delphinium*, *Cyanus* of all ſorts, *Candy tufts*, Garden *Panſy*, *Muſcipula*, *Scabious*, *Scorpoides*, *Medica*, *Holyhocks*; *Columbines*, which renew every five or ſix years, elſe they will degenerate, *&c.*

Continue *new* and freſh *Hotbeds* to entertain ſuch *exotic* Plants as arrive not to their perfection

April Part. fection without them, till the *Air* and *common earth* be qualified with ſufficient *warmth* to preſerve them abroad: A *Catalogue* of theſe you have in the former *Month.*

Tranſplant ſuch *Fibrous roots* as you had not finiſh'd in *March*; as *Violets, Hepatica, Primroſes, Hellebore, Matricaria, &c.* Place *Auricula* Seedlings in the ſhade.

Sow *Pinks, Carnations*, which you may continue to trim up, and cleanſe from dead and rotten leaves, *viz.* your old roots: Sow *Sweet-Williams, &c.* to *flower* next year: this, after rain.

Set *Lupines, &c.*

Sow *Lucoium* in Full Moon, ſprinkle it thin, frequently remove them, and replant in moiſt weather the following *Spring.*

Sow alſo yet *Pine-kernels, Firſeeds, Phillyrea, Alaternus*, & moſt *perennial Greens.* Vide *Sept.*

Now take out your *Indian Tuberoſes,*

Tuberoses, parting the *Off-sets* (but with care, lest you break their *fangs*) then *pot* them in * *natural* (not *forc'd*) Earth; a layer of *rich* Mould *beneath*, and *about this*, natural *earth* to nourish the *Fibres*, but not so as to touch the *Bulbs*: then plunge your *Pots* in a *hot-bed* temperately *warm*, and give them no *water* till they *spring*, and then *set* them under a *South-wall*: In dry weather *water* them freely, and expect an incomparable *Flower* in *August*. Thus likewise treat the *Narcissus* of *Japan*, or *Garnsey-Lilly* for a later *Flower*; although that nice *Curiosity*, set only in a warm corner, exposed to the *South*, without any removal at all for many years, has sometimes prospered better: the protuberant *fangs* of the *Yuca* are to be treated like the *Tuberoses*. Make much of this *precious* Direction. *April* Part.

* Vide *May*.

Set out and expose *Flos Cardi-*

April Part. *nalis*: Slip and set *Marums*: Water *Anemonies*, *Ranunculus's*, and Plants in *Pots* and *Cases* once in two or three days, if *drought* require it. But carefully protect from violent *storms* of *Rain*, *Hail*, and the too parching *darts* of the *Sun* your *Pennach'd Tulips*, *Ranunculus's*, *Anemonies*, *Auricula's*, covering them with *Matrasses* supported on *Cradles* of *Hoops*, which have now in readiness. Now is the *season* for you to bring the choice and tender *shrubs*, &c. out of the *Conservatory*; such as you durst not adventure forth in *March*; let it be in a *fair* day; only your *Orange-trees* may remain in the *house* till *May*, to prevent all danger. You may now *graff* these tender shrubs, *&c.* by *Approach*, viz. *Oranges*, *Lemmons*, *Pomegranads*, *Jasmines*, &c.

Now, towards the *end* of *April*, you may *Transplant* and *Remove* your tender *shrubs*, &c. as

Spanish

Spaniſh Jaſmines, *Myrtles*, *Oleanders*, young *Oranges*, *Cyclamen*, *Pomegranads*, *&c.* But firſt let them begin to *ſprout*; placing them a *fortnight* in the *ſhade*: but about *London* it may be better to defer this work till mid-*Auguſt*: *Vide* alſo *May*, from whence take Directions how to refreſh and trim them. Prune now your *Spaniſh Jaſmine* within an *inch* or two of the *ſtock*: but firſt ſee it begin to *ſhoot*. Mow *Carpet-walks*, and ply *Weeding*, *&c.* *April Part.*

Towards the *end* (if the cold *winds* are paſt) and eſpecially after *ſhowers*, clip *Phillyrea*, *Alaternus*, *Cypreſs*, *Box*, *Myrtles*, *Barba Jovis*, and other *tonſile Shrubs*, *&c.*

Flowers in *Prime*, or yet *laſting.*

Anemonies, *Ranunculus's*, *Auricula Urſi*, *Chamæ-iris*, *Crown Imperial*, *Caprifolium*, *Cyclamen*, *Bell-flower*, *Dens Caninus*, *Fritillaria*, *Gentianella*, *Hypericum frutex*, double *Hepatic's*, *Jacynth* ſtarry, double *Daiſies*, *Florence Iris*, tufted *Narciſſus*, white, double, and common, *Engliſh* double: *Primroſe*, *Cowſlips*, *Pulſatilla*, *Ladies Smock*, *Tulips* medias, *Ranunculus's of Tripoly*, white *Violets*, *Musk Grape-flower*, *Geranium*, *Radix Cava*, *Caltha paluſtris*, *Parietaria Lutea*, *Leucoium*, *Perſian Lillies*, *Pæonies*, double *Jonquils*, *Muſcaria* reverſed, *Cochlearia*, *Perſian*

sian Jasmine, Acanthus, Lilac, April Part.
Rosemary, Cherries, Wall-Pears, Almonds, Abricots, Peaches, White Thorn, Arbor Judæ blossoming, *&c.*

II

MAY

Hath xxxj days, long—15h—09m

Sun rises 04h—25m Sets 07h—35m

To be done

In the *Orchard*, and *Olitory-Garden.*

SOw *Sweet Marjoran*, *Basil*, *Thyme*, hot and *Aromatic Herbs* and *Plants* which are the most tender.

Sow *Purslan*, to have young: *Lettuce*, large-sided *Cabbage*, painted *Beans*, &c.

Look carefully to your *Melons*; and towards the *end* of this *Month* forbear to *cover* them any longer on *Ridges* either with *Straw* or *Matrasses*, &c.

Ply

Ply the *Laboratory*, and diſtill *Plants* for *Waters*, *Spirits*, &c. *May Olit.*

Continue *Weeding* before they run to *Seeds*.

Now ſet your *Bees* at full *liberty*, look out often, and expect *Swarms*, &c.

Fruits in *Prime*, or yet *laſting*.

Apples.

Pepins, *Deuxans* or *John Apples*, *Weſt-berry Apples*, *Ruſſetting*, *Gilly-flower Apples*, the *Maligar*, &c. *Codling*.

Pears.

Great *Kairville*, Winter *Bon-Creſtien*, Black Pear of *Worceſter Surrein*, Double *Bloſſom Pear*, &c.

Cherries, &c.

The *May Cherry*, *Strawberries*, &c.

II

MAY

Hath xxxj days, long—15h—09m

Sun rises 04h—25m Sets 07h—35m

To be done

In the *Parterre*, and *Flower-Garden.*

NOw bring your *Oranges*, &c. boldly out of the *Conservatory*; 'tis your only *season* to *Transplant* and *Remove* them: let the *Cases* be filled with *natural earth* (such as is taken the first half *spit*, from just under the *Turf* of the best *Pasture* ground, in a place that has been well *fother'd* on) mixing it with one part of rotten *Cow-dung*, or very mellow *Soil* screen'd, and prepared some time

time before; if this be too *ſtiff*, ſift a little *Lime* diſcreetly with it, with the rotten ſticks of *Willows*: Then *cutting* the too thick, and extravagant *Roots* a little, eſpecially at bottom, ſet your *Plant*; but not too *deep*; rather let ſome of the *Roots* appear. Laſtly, *ſettle* it with temperately enrich'd *water*, (ſuch as is impregnated with *Neat* and *Sheeps-dung* eſpecially, ſet and ſtirred in the *Sun* ſome few dayes before; but be careful, not to drench them too much at firſt; but giving it by degrees day after day, without touching with it the *ſtem*:) having before put ſome *rubbiſh* of *Lime-ſtones*, *pebbles*, *ſhells*, *Fagot ſpray*, or the like at the bottom of the *Caſes*, to make the *moiſture* paſſage, and keep the *earth* looſe for fear of rotting the *fibres*: See *Novemb.* Then ſet them in the *ſhade* for a *fortnight*, and afterwards expoſe them to the *Sun*. *May Part.*

Give

May Part. Give now also all your *hous'd Plants* (such as you do not think requisite to take out) fresh *earth* at the *surface*, in place of some of the old *earth* (a hand depth or so) and loosning the rest with a *Fork* without wounding the *Roots*: let this be of excellent rich * *soil*, such as is throughly *consumed*, and will *sift*, that it may *wash* in the *vertue*, and comfort the *Plant*: *Brush* and *cleanse* them likewise from the *dust* contracted during their enclosure. *These two last directions have till now been kept as considerable* Secrets *amongst our* Gard'ners: *Vide August* and *September*.

* Vide *July*.

Shade your *Carnations* and *Gilly-flowers* after *mid-day* about this *season*: Plant also your *Stock-Gilly-flowers* in Beds, full *Moon*.

Continue watering *Ranunculus's*. Transplant forth your *Amaranthus's*, where you would have them stand: Sow *Antirrhinum*; or you may set it.

Gather

Gather what *Anemony ſeed* you find ripe, and that is worth ſaving, preſerve it very dry. *May Part.*

Cut likewiſe the *Stalks* of ſuch *Bulbous flowers* as you find dry.

Towards the *end* take up thoſe *Tulips* which are dri'd in the *ſtalk*; covering what you find to lie *bare* from the *Sun* and *ſhowers*.

Flowers

Flowers in *Prime*, or yet *lasting.*

LAte set *Anemonies* and *Ranunculus omn. gen. Anapodophylon, Blattaria, Chame-iris, Augustifol. Cyanus, Cytisus Maranthe, Cyclamen, Heleborine, Columbines, Caltha palustris*, double *Cotyledon, Digitalis, Fraxinella, Gladiolus, Geranium, Horminum Creticum*, yellow *Hemerocallis*, strip'd *Jacynth*, early *Bulbous Iris, Asphodel*, yellow *Lillies, Lychnis, Jacea, Bellis* double, white and red, *Millefolium luteum, Phalangium Orchis, Lilium Convallium, Span. Pinks, Deptford Pinks, Rosa* common, *Cinnamon, Guelder* & *Centifol.* &c. *Oleaster, Che y-bay, Trachelium, Cowslips, Hesperis, Antirrhinum, Syringa's, Sedums, Tulips* Serotin, &c. *Valerian, Veronica* double & single, *Musk Violets, Ladies*

Ladies Slipper, *Stock-Gilly-flowers*, *Spanish Nut*, *Star-flower*, *Chalcedons*, ordinary *Crowfoot*, red *Martagon*, *Bee-flowers*, *Campanula's* white and blew, *Persian Lilly*, *Honey-suckles*, *Bugloss*, *Homers Moly*, and the white of *Dioscorides*, *Pansis*, *Prunella*, purple *Thalictrum*, *Sisymbrium* double and simple, *Lencoium bulbosum serotinum*, *Peonies*, *Sambucus*, *Rosemary*, *Stœchas*, *Sea-Narcissus*, *Barba Jovis*, *Laurus*, *Satyrion*, *Oxyacanthus*, *Tamariscus*, *Apple blossoms*, &c. May Part.

JUNE

June Olit.

♋

JUNE

Hath xxx days, long—16h—17m

Sun rises 03h—51m Sets 08h—09m

To be done

In the *Orchard*, and *Olitory-Garden.*

SOw *Lettuce*, *Chervil*, *Radish*, *&c.* to have young and tender *Salleting.*

About the *midst* of *June* you may Inoculate *Peaches*, *Abricots*, *Cherries*, *Plums*, *Apples*, *Pears*, &c.

You may now also (or in *May* before) cleanse *Vines* of exuberant *Branches* and *Tendrels*, cropping (not cutting) and stopping the second *Joynt* immediately before the *Fruit*, and some of the under branches

branches which bear no *fruit*; *Jun Olit.*
eſpecially in young *Vineyards* when they firſt begin to *bear*, and thence forwards; binding up the reſt to *Props*.

Gather *Herbs* in the *Full* to keep *dry*; they keep and retain their *vertue* and *ſweet ſmell*, better *dryed* in the *ſhade* than *Sun*, whatever ſome pretend.

Now is your *ſeaſon* to diſtill *Aromatic Plants*, &c.

Water lately planted *Trees*, and put moiſt and half rotten *Fearn*, *&c.* about the foot of their *ſtems*, having firſt clear'd them of weeds, and a little ſtirred the earth.

Look to your *Bees* for *Swarms* and *Caſts*; and begin to deſtroy *Inſects* with *Hoofs*, *Canes*, and tempting *Baits*, &c. Gather *Snails* after *Rain*, &c.

Fruits

Junt Olit.

Fruits in *Prime*, or yet *lasting.*

Apples.

Juniting (first ripe) *Pepins*, *John-Apples*, *Robillard*, Red *Fennouil*, &c. French.

Pears.

The *Maudlin* (first ripe) *Madera*, *Green-Royal*, St. *Laurence Pear*, &c.

Cherries, *&c.*

Duke, *Flanders*, *Heart* } Black. Red. White.

Luke-ward, early *Flanders*, the *Common Cherry*, *Spanish* Black, *Naples* Cherries, *&c.*

Rasberries, *Corinths*, *Strawberries*, *Melons*, &c.

JUNE

♉

JUNE.

Hath xxx days, long—16h—17m

Sun rises 03h—51m Sets 08h—09m

To be done

In the *Parterre*, and *Flower-Garden.*

TRansplant *Autumnal Cyclamens* now, if you would change their place, otherwise let them *stand.* Take up *Iris Chalcedon.*

Gather the ripe *Seeds* of *Flowers* worth the saving, as of choicest *Oriental Jacynth*, *Narcissus* (the two lesser, pale spurious *Daffodils* of a whitish green, often produce varieties) *Auricula's*, *Ranunculus's*, *&c.* and preserve

June Part. them dry: Shade your *Carnations* from the Afternoon *Sun.*

You may now begin to lay your *Gilly-flowers.*

Take up your rarest *Anemonies* and *Ranunculus's* after rain (if it come seasonable) the *stalk* withered, and dry the *Roots* well: This about the *end* of the *Month.* In mid *June* inoculate *Jasmine, Roses,* and some other rare *Shrubs.* Sow now also some *Anemony Seeds.* Take up your *Tulip bulbs*, burying such immediately as you find naked upon your *Beds*; or else *plant* them in some *cooler* place; and *refresh* over-parch'd *Beds* with water. Water your *Pots* of *Narcissus* of *Japan* (that rare Flower) *&c.* Stop some of your *Scabious* from running to *seed* the first year, by now removing them, and next year they will produce excellent *Flowers.* Also may you now take up all such *Plants* and *Flower-roots* as endure not well out of the ground,

ground, and *replant* them again immediately; such as the early *Cyclamen*, *Jacynth Oriental*, and other *bulbous Jacynths*, *Iris*, *Fritillaria*, *Crown-Imperial*, *Martagon*, *Muscaris*, *Dens Caninus*, &c. The *slips* of *Myrtle* set in some *cool* and *moist* place do now frequently take *root*: Also *Cytisus Innatus* will be multiplied by *slips* in a moist place, such as are an *handful long* of that *Spring*, but neither by *Seeds* or *Layers*. Look now to your *Aviary*; for now the *Birds* grow *sick* of their *Feathers*; therefore assist them with *Emulsions* of the *cooler seeds bruised* in their *water*, as *Melons*, *Cucumbers*, &c. Also give them *Succory*, *Beets*, *Groundsel*, *Chickweed*, fresh *Gravel*, and *Earth*, &c. *June Rare.*

Flowers in *Prime*, or yet *lasting.*

Amaranthus, Antirrhinum Asphodel, Campanula, Convolvulus, Cyclamen, Clematis, Pannonica, Cyannus, Blattaria, Digitalis, Gladiolus, Hedysarum, Geranium, Horminum Creticum, Hieracium, Hesperis, bulbous *Iris,* and divers others, *Lychnis var. generum, Martagon* white and red, *Millefolium* white and yellow, *Nasturtium Indicum, Nigella, Aster Atticus, Hellebore, Alb. Gentiana, Trachelium, Ficus Indica, Fraxinella,* Shrub *Nightshade, Jasmines, Honey-suckles, Genista Hisp. Carnations, Pinks, Armerium, Ornithogalum, Panse, Phalangium Virginianum, Larks-heel* early, *Philosella, Roses, Thlaspi Creticum,* &c. *Veronica, Viola pentaphyl. Campions* or *Sultans, Mountain Lillies* white, red:

red: double *Poppies*, *Palma Christi*, *Stock-gillyflowers*, *Corn-flag*, *Holly-hoc*, *Muscaria*, *Serpillum Citratum*, *Phalangium Allobrogicum*, *Oranges*, *Rosemary*, *Lentiscus*, *Pomegranade*, the *Lime-tree*, &c. *June. Part.*

♌

JULY

Hath xxxj days, long—15h—59m

Sun rises 4h—00m—Sets 8h 00m

To be done

In the *Orchard*, and *Olitory-Garden.*

SOw *Lettuce*, *Radish*, *&c.* to have tender *Salleting.*

Sow *later Pease* to be ripe six weeks after *Michaelmas.*

Water young planted *Trees*, and *Layers*, *&c.* and reprune now *Abricots* and *Peaches*, saving as many of the *young* likeliest *shoots* as are well placed; for the now *Bearers* commonly perish, the *new ones* succeeding. Cut *close* and *even*, purging your *Wall-fruit* of

super-

superfluous leaves which hinder from the *Sun*; but do it discreetly. *July Olit.*

You may now also begin to *Inoculate.*

Let such *Olitory-herbs* run to *seed* as you would save.

Towards the *latter end*, visit your *Vineyards* again, *&c.* and *stop* the exuberant *shoots* at the *second joynt* above the *fruit* (if not finished before;) but not *so* as to expose it to the *Sun*, without some umbrage.

Remove long-sided *Cabbages* planted in *May*, to head in *Autumn*; 'tis the best *Cabbage* in the World.

Now begin to streighten the *entrance* of your *Bees* a little; and help them to *kill* their *Drones*, if you observe too many; setting the new invented *Cucurbit-Glasses* of *Beer* mingled with *Honey*, to entice the *Wasps*, *Flies*, &c. which waste your *store*. Also

July Olit. hang *Bottles* of the ſame *Mixture* near your *Red-Roman Nectarines* and other tempting *fruits*, for their deſtruction; elſe they many times invade your beſt *Fruit*.

Look now alſo diligently under the *leaves* of *Mural Trees* for the *Snails*; they ſtick commonly ſomewhat *above* the *fruit*: pull not *off* what is *bitten*; for then they will certainly begin *afreſh*.

Fruits in *Prime*, or yet *laſting*.

Apples.

Deux-ans, *Pepins*, Winter *Ruſſeting*, *Andrew Apples*, *Cinnamon Apple*, red and white *Juneting*, the *Margaret Apple*, &c.

Pears.

The *Primat*, *Ruſſet Pears*, *Summer Pears*, green *Cheſil Pears*, *Pearl Pear*, &c.

Cherries.

Cherries.

Carnations, Morella, Great-bearer, Morocco-Cherry, the *Egriot, Bigarreaux,* &c.

Peaches.

Nutmeg, Iſabella, Perſian, Newington, Violet muſcat, Rambouillet.

Plums, &c.

Primordial, Myrobalan, the red, blew, and amber *Violet, Damaſc. Denny Damaſc. Pear-plum, Damaſc. Violet,* or *Cheſon-plum, Abricot-plum, Cinnamon-plum,* the *Kings plum, Spaniſh, Morocco-plum, Lady Eliz. plum, Tawny, Damaſcene,* &c.

Rasberries, Gooſeberries, Corinths, Strawberries, Melons, &c.

JULY

♌

JULY

Hath xxxj days, long —15h—59m

Sun rises 04h—00m Sets 08h—00m

To be done

In the *Parterre*, and *Flower-Garden.*

SLip *Stocks*, and other *lignous Plants* and *Flowers*. From henceforth to *Michaelmas* you may also lay *Gillyflowers* and *Carnations* for *Increase*, leaving not above *two* or three *spindles* for *flowers*, and nipping off superfluous *Buds*, with *Supports*, *Cradles*, *Canes* or *Hoofs*, to establish them against *winds*, and destroy *Earwigs*.

The *Layers* (will in a *month* or *six weeks*) strike *root*, being *planted* in

in a *light loamy earth*, mixed with excellent *rotten Soil* and *ſifted*: plant ſix or eight in a *Pot* to ſave *room* in *Winter*: keep them well from too much *Rains*; yet water them in drought, ſparing the leave. If it prove too wet, lay your Pots ſide-long; but *ſhade* thoſe which *blow* from the afternoon *Sun*, as in the former *Month*. *July* Part.

Yet alſo you may lay *Myrtles*, *Laurels*, and other curious *Greens*.

Water young planted *Shrubs* and *Layers*, &c. as *Orange Trees*, *Myrtles*, *Granads*, *Amomum* eſpecially, which *Shrub* you can hardly *refreſh* too often, and he requires abundant *compoſt*; as do likewiſe both the *Myrtle* and *Granad*-Trees; therefore whenever you trim their *Roots*, or change their *Earth*, apply the richeſt *Soil* (ſo it be ſweet and well conſum'd) you can to them, *&c.* Clip *Box*, *&c.* in *Parterres*, *Knots*, and

Com-

July Part. *Compartiments*, if need be, and that it grow out of *order*; do it after *Rain*.

Graff by *Approach*, *Inarch*, and *Inoculate*, *Jasmines*, *Oranges*, and other your choicest *Shrubs*.

Take up your early *autumnal Cyclamen*, *Tulips*, and *Bulbs* (if you will *Remove* them, *&c.*) before mentioned; *Transplanting* them *immediately*, or a *Month* after, if you please, and then cutting off and trimming the *Fibres*, spread them to *air* in some *dry* place.

Gather *Tulip seed*, if you please: but let it lie in the *pods*.

Gather now also your early *Cyclamen seed*, and *sow* it presently in *Pots*.

Remove seedling *Crocus's* sow'd in *September* constantly at this *season*, placing them at wider intervals, till they begin to bear.

Likewise you may *take up* some *Anemonies*, *Ranunculus's*, *Crocus*, *Crown Imper.* *Persian Iris*, *Fritillaria*,

laria, and *Colchicums*; but plant the three last as soon as you have taken them up, as you did the *Cyclamens*; or you may stay till *August* or *September* e're you take them up, and replant *Colchicums*. *July Part.*

Remove now *Dens Caninus*, *&c.*

Take up your *Gladiolus* now yearly, the blades being dry, or else their *Off-sets* will poyson the ground.

Latter end of *July*, *sift* your *Beds* for *Off-sets* of *Tulips*, and all *Bulbous roots*; also for *Anemonies*, *Ranunculus's*, *&c.* which will prepare it for *replanting* with such things as you have ready in *Pots* to plunge, or set in the *naked* earth till the next *season*; as *Amaranths*, *Canna Ind. Mirabile Peruv. Capsicum Ind. Nasturtium Ind. &c.* that they may not lie empty, and disfurnished.

You may sow some *Anemonies*, keeping them temperately moist.

Continue

July Part. Continue to *cut off* the withered *ſtalks* of your lower *Flowers*, *&c.* and all others, covering with *earth* the *bared* roots, *&c.*

Now (in the *drieſt ſeaſon*) with *Brine*, *Pot-aſhes*, and *Water*, or a *Decoction of Tobacco refuſe*, water your *Gravel-walks*, *&c.* to deſtroy both *Worms* and *Weeds*, of which it will *cure* them for ſome *years*.

Fruits in *Prime*, or yet *laſting*.

Amaranthus, *Aſphodel*, *Antirrhinum*, *Campanula*, *Clematis*, *Cyanus*, *Convolvulus*, *Sultani*, *Veronica* purple and odoriferous; *Digitalis*, *Eryngium Planum*, *Ind. Phaſeolus*, *Geranium triſte*, and *Creticum*, *Gladiolus*, *Gentiana*, *Heſperis*, *Nigella*, *Hedyſarum*, *Fraxinella*, *Lychnis Chalcedon*, *Jacea*, white and double, *Naſturt. Ind. Millefolium*, *Musk-roſe*, *Flos Africanum*,

canus, Thlaspi Creticum, Veronica mag. & parva, Volubilis, Balsam-Apple, Holy-hoc, Corn-flower, Alkekengi, Lupines, Scorpion-grass, Caryophyllata omn. gen. Stock Gilly-flower, Scabiosa, Mirab. Peru Spartum Hispan. Monthly Rose, *Jasmine, Indian Tuberous Jacynth, Limonium, Linaria Cretica, Pansies, Prunella, Delphinium, Phalangium, Periploca Virgin. Flos Passionis, Flos Cardinalis, Tucca, Oranges, Amomum Plinii, Oleanders* red and white, *Agnus Castus, Arbutus, Olive, Liguſtrum, Tilia,* &c. July Part.

AUGUST

Aug. Olit.

♌

AUGUST

Hath xxxj days, long—14h—33m

Sun rises 04h—43m Sets 07h—17m

To be done

In the *Orchard*, and *Olitory-Garden.*

Inoculate now *early*, if before you began not, and gather your *Bud* of that year. Let this work be done before you remove the *Stocks.*

Prune off yet also superfluous *branches* and *shoots* of this *second Spring*; but be careful not to expose the *fruit* without leaves sufficient to *skreen* it from the *Sun*; *furnishing* and *nailing* up what you will spare to cover the defects

fects of your *Walls*. Continue yet to cleanſe your *Vines* from exuberant *branches* that too much hinder the *Sun*. *Aug. Olit.*

Pull up the *Suckers*.

Clip *Roſes* now done bearing.

Sow *Radiſh*, eſpecially the *Black*, to prevent running up to *ſeed*, *pale tender Cabbages*, *Cauliflowers* for *Winter Plants*, *Cornſallet*, *Marigolds*, *Lettuce*, *Carrots*, *Parſneps*, *Turneps*, *Spinage*, *Onions*; alſo curl'd *Endive*, *Angelica*, *Scurvy-graſs*, &c.

Likewiſe now pull up ripe *Onions* and *Garlic*, &c.

Towards the *end* ſow *Purſlan*, *Chard-beet*, *Chervil*, &c.

Tranſplant ſuch *Lettuce* as you will have abide all *Winter*.

Gather your *Olitory ſeeds*, and *clip*, and cut all ſuch *Herbs* and *Plants* within one *handful* of the *ground* before the *Full*. Laſtly,

Unbind and releaſe the *Buds* you *inoculated*, if taken, *&c.* likewiſe

Aug. plit. wise stop, and prune them.

Now *vindemiate*, and take your *Bees* towards the expiration of this *Month*; unless you see cause (by reason of the *weather* and *season*) to defer it till mid-*September*: But if your *Stocks* be very *light* and weak, begin the earlier.

Make your Summer *Perry* and *Cider*.

Fruits in *Prime*, and yet *lasting*.

Apples.

THE *Ladies Longing*, the *Kirkham* Apple, *John* Apple; the *Seaming* Apple, *Cushion* Apple, *Spicing*, *May-flower*, *Sheeps snout*.

Pears.

Windsor, *Sovereign*, *Orange*, *Bergamot*, *Slipper* Pear, *Red Catherine*,

rine, *King Catherine*, *Denny* Pear, *Prussia* Pear, Summer *Poppering*, *Sugar* Pear, *Lording* Pear, *&c.* Aug. Oct.

Peaches.

Roman Peach, *Man* Peach, *Quince* Peach, *Rambouillet*, *Musk* Peach, *Grand Carnation*, *Portugal* Peach, *Crown* Peach, *Bourdeaux* Peach, *Lavar* Peach, the Peach *Des Pot*, *Savoy Malacoton*, which lasts till *Michaelmas*.

Nectarines.

The *Muroy* Nectarine, *Tawny*, Red-*Roman*, little *Green* Nectarine, *Cluster* Nectarine, *Yellow* Nectarine.

Plums.

Imperial, Blew, White *Dates*, Yellow *Pear-plum*, Black *Pear-plum*, White *Nutmeg*, late *Pear-plum*, Great *Anthony*, *Turkey* Plum, the *Jane* Plum.

Aug. Olit.

Other Fruit.

Cluſter-grape, Muſcadine, Corinths, Cornelians, Mulberries, Figs, Filberts, Melons, &c.

AUGUST

♌

AUGUST

Hath xxxj days, long—14h—33m

Sun rises 04h—43m Sets 07h—17m

To be done

In the *Parterre*, and *Flower-Garden.*

NOw (and not till *now*, if you expect *success*) is the just *season* for the *budding* of the *Orange* Tree: *Inoculate* therefore at the commencement of this *Month.*

Now likewise take up your *bulbous Iris's*; or you may sow their *seeds*, as also those of *Larks-heel*, *Candy-tufts*, *Columbines*, *Iron-colour'd Fox-gloves*, *Holly-hocks*, and such Plants as endure *Win-*

Aug. Part. ter, and the approaching *seasons.*

Plant some *Anemony* roots to have *flowers* all *winter*, if the *roots* escape; and take up your *seedlings* of last year, which now transplant for bearing: also plant *Dens Caninus*, *Autumnal Crocus* & *Colchicums*. Note, that *English Saffron* may be suffered to stand for increase to the *third* or *fourth* year without removing.

You may now sow *Narcissus*, and *Oriental Jacynths*, and replant such as will not do well out of the *Earth*; as *Fritillaria*, *Hyacinths*, *Martagon*, *Dens Caninus*, *Lillies*. *Gilly-flowers* may yet be *slipp'd*.

Continue your taking up of *Bulbs*, dry them, and lay them up; *Lillies*, &c. of which before.

Gather from day to day your *Alaternus* Seed as it grows black and ripe, and spread it to *sweat*, and *dry* before you put it up; therefore *move* it sometimes with a *Broom*, that the *seeds* clog not together,

gether, unless you will separate it from the *Mucilage*, for then you must a little bruise it wet; wash and dry them in a Cloth. *Aug. Part.*

Water well your *Balsamine fem.*

Most other *Seeds* may now likewise be gathered from *Shrubs*, which you find ripe.

About mid-*August*, transplant *Auricula's*, dividing old and lusty *Roots*; also prick out your *Seedlings*: They best like a *loamy sand*, or light moist *Earth*; yet rich and shaded: You may likewise sow *Auricula*.

Now, towards the latter end, you may sow *Anemony* seeds, *Ranunculus's*, *&c.* lightly covered with fit Mould in *Cases*, shaded and frequently *refreshed*: Also *Cyclamen*, *Jacynths*, *Iris*, *Hepatica*, *Primroses*, *Fritillaria*, *Martagon*, *Fraxinella*, *Tulips*, &c. but with *patience*, for some of them; because they *flower* not till *three*,

Aug. Part. *four*, *five*, *six*, and *seven* years after, especially the *Tulips*; therefore disturb not their *Beds*, and let them be under some *warm* place, *shaded* yet, till the *heats* are past, lest the *seeds* dry; only the *Hepatica's* and *Primroses* may be sow'd in some less exposed *Beds*.

Now, about *Bartholomew tide*, is the only *secure season* for *removing* and *laying* your *perennial Greens*; *Oranges*, *Lemmons*, *Myrtles*, *Phillyreas*, *Oleanders*, *Jasmines*, *Arbutus*, and other rare *Shrubs*, as *Pomegranads*, *Monthly-Roses*, and whatever is most obnoxious to *Frosts*; taking the *shoots* and *branches* of the past *spring*, and *pegging* them down in very *rich Earth* & *Soil* perfectly consum'd, *watering* them upon all occasions during the *Summer*; and by this time *twelvemonth* they will be ready to *remove*, *transplanted* in fit earth, set in the *shade*, and kept moderately *moist*, not *over-*

wet,

wet, leſt the young *fibres* rot; after *three* weeks ſet them in ſome more airy place, but not in the *Sun*, till fifteen dayes more: *Vide* our *Obſervations* in *April*, and *May*, for the reſt of theſe choice *Directions*. *Aug. Part.*

Flowers in *Prime*, or yet *laſting*.

Amaranthus, *Anagallis*, *Luſitanica*, *Aſter Atticus*, *Blattaria*, *Spaniſh Bells*, *Belvedere*, *Carnations*, *Campanula*, *Clematis*, *Cyclamen Vernum*, *Datura Turcica*, *Eliochryſon*, *Eryngium planum & Amethyſtinum*, *Geranium Creticũ*, and *Triſte*. Yellow *Stocks*, *Hieracion minus Alpeſtre*, *Tuberoſe Hyacinth*, *Limonium*, *Linaria Cretica*, *Lychnis*, *Mirabile Peruvian*, Yellow *Milleſolium*, *Naſtur. Ind.* Yellow Mountain *Hearts-eaſe*, *Maracoc*, *Africanus Flos*, *Convolvulus's*, *Scabious*,

Aug. Part. *bious, Asphodils, Delphinium, Lupines, Colchicum, Leucoion, Autumnal Hyacinth, Holly-hoc, Starwort, Heliotrop, French Marigold, Daisies, Geranium nocte olens,* Common *Pansies, Larks-heels* of all colours, *Nigella, Helleborus, Balsamin. fœm. Lobels Catch-fly, Thlaspi Creticum, Rosemary, Musk Rose, Monthly Rose, Oleanders, Spanish Jasmine,* Yellow *Indian Jasmine, Myrtles, Oranges, Pomegranads* double and single flowers, Shrub *Spiræa, Agnus Castus,* the *Virginian Martagon, Malva arborescens,* &c.

SEPTEM-

♎

SEPTEMBER

Hath xxx days, long—12h—37m

Sun rises 05h—41m Sets 06h—19m

To be done

In the *Orchard*, and *Olitory-Garden.*

GAther now (if ripe) your *Winter Fruits*, as *Apples*, *Pears*, *Plums*, &c. to prevent their *falling* by the great *Winds:* Also gather your *Wind-falls* from day to day: do this work in *dry* weather.

Release Inoculated *Buds*, or sooner, if they pinch.

Sow *Lettuce*, *Radish*, *Spinage*, *Parsneps*, *Skirrets*, &c. *Cauly-flowers*, *Cabbages*, *Onions*, &c.

Scurvy-

Sept. Olit. *Scurvy graſs*, *Anniſeeds*, &c.

Now may you *tranſplant* moſt ſorts of *Eſculent* or *Phyſical* Plants, *&c.*

Alſo *Artichokes* and *Aſparagus-roots.*

Sow alſo *Winter Herbs* and *Roots*, and plant *Strawberries* out of the *Woods.*

Towards the *end* earth up your *Winter Plants* and *Sallad Herbs*; and plant forth your *Caully-flowers* and *Cabbages* which were ſown in *Auguſt.*

No longer now defer the *taking* of your *Bees*, ſtreightning the *entrances* of ſuch *Hives* as you leave to a ſmall *paſſage*, and continue ſtill your *hoſtility* againſt *Waſps*, and other robbing *Inſects.*

Cider-making continues.

Fruits

Fruits in *Prime*, or yet *laſting*.

THe *Belle-bonne*, the *William*, Summer *Pearmain*, *Lording Apple*, *Pear-apple*, *Quince-apple*, *Red-greening ribb'd*, *Bloody-Pepin Harvey*, *Violet-apple*, &c.

Pears.

Hamdens Bergamon (firſt ripe) Summer *Bon Chreſtien*, *Norwich*, *Black Worceſter*, (baking) *Greenfield*, *Orange*, *Bergamot*, the *Queen* Hedge-pear, *Lewes-pear* (to dry excellent) *Frith-pear*, *Arundel pear* (alſo to bake) *Brunſwick pear*, Winter *Poppering*, *Bings-pear*, *Biſhops-pear*, (baking) *Diego*, *Emperours-pear*, *Cluſter-pear*, *Meſſire Jean*, *Rowling-pear*, *Balſam-pear*, *Bezy d'Hery*, &c.

Peaches,

Peaches, *&c.*

Malacoton, and some others, if the year prove backwards, *Almonds*, *&c.*

Quinces.

Little *Blew-grape*, *Muscadine-grape*, *Frontiniac*, *Parsley*, great *Blew-grape*, the *Verjuice-grape* excellent for sauce, *&c.*

Berberries, &c.

SEPTEM-

♎

SEPTEMBER

Hath xxx days, long —12h—37m

Sun rises 05h—41m Sets 06h—19m

To be done

In the *Parterre*, and *Flower-Garden.*

PLant some of all the sorts of *Anemonies* in good, rich natural earth, especially the *Latifol.* after the first *Rains*, if you will have *Flowers* very forwards; but it is surer to attend till *October*, or the *Month* after, lest the over *moisture* of the *Autumnal* Seasons give you cause to repent.

Now is the most proper season to sow *Auricula seeds*, setting the *Cases* in the *Sun* till *April*: See *April.* Be-

Sept. Part. Begin now also to *plant* some *Tulips*, unless you will stay till the latter end of *October*, to prevent all hazard of *rotting* the *Bulbs*. Plant *Daffodils* and *Colchicum*.

All *Fibrous* Plants, such as *Hepatica*, *Hellebore*, *Cammomile*, &c. Also the *Capillaries*; *Matricaria*, *Violets*, *Primroses*, &c. may now be *transplanted*; as likewise *Iris*, *Chalcedon*, *Cyclamen*, &c.

Now you may also continue to sow *Alaternus*, *Phillyrea*, (or you may forbear till the *Spring*) *Iris*, *Crown Imperial*, *Martagon*, *Tulips*, *Delphinium*, *Nigella*, *Candy-tufts*, *Poppy*; and generally all the *Annuals* which are not impaired by the *Frosts*.

Sow *Primroses* likewise: Remove seedling *Digitalis*, and plant the slips of *Lychnis* at the beginning.

Your *Tuberoses* will not endure the wet of this *season*, therefore set the *Pots* into your *Conserve*, and

and keep them very *dry*. It is beſt to take them out of the *Pots* about the beginning of this *Month*, and either to preſerve them in dry *ſand*, or wrap them up in *Papers*, and ſo put them in a Box near the Chimney. *Sept. Part.*

Bind now up your *Autumnal Flowers* and *Plants* to *Stakes*, to prevent ſudden *Guſts* which will elſe proſtrate all you have ſo induſtriouſly raiſed.

Now you may take off *Gilly-flower layers* with earth and all, and plant them in *Pots*, or borders ſhaded.

Crocus will be now raiſed of *Seeds*.

Prune *Pines* and *Firrs* a little after this *Æquinox*, if you omitted it in *March*. Vide *March*.

About *Michaelmas* (ſooner or later, as the *ſeaſon* directs) the weather *fair*, and by no means *foggie*, retire your choice *Greens*, and rareſt *Plants* (being *dry*) as

Sept. Part. *Oranges*, *Lemmons*, *Indian* and *Span.* *Jasmine*, *Oleanders*, *Barba Jovis*, *Amomum Plin.* *Cytisus Lunatus*, *Chamelæa tricoccos*, *Cistus Ledon Clusii*, *Dates*, *Aloes*, *Sedums*, *&c.* into your *Conservatory*; ordering them with fresh *Mould*, as you were taught in *May* and *July*, *viz.* taking away some of the upmost *exhausted* earth, and *stirring* up the rest, fill the *Cases* with rich and well consumed *soil* to wash in, and nourish the roots during *Winter*; but as yet leaving the *doors* and *windows* open, and giving them much *Air*, so the *Winds* be not sharp and high, nor weather *foggie*; do thus till the *cold* being more intense, advertise you to *inclose* them altogether: *Myrtles* will endure abroad near a *Month* longer.

The *cold* now advancing, set such *Plants* as will not endure the *House*, into the *earth*; the *Pots* two or three *inches* lower than the *surface*

surface of some *Bed* under a *Southern* exposure: Then *cover* them with *Glasses*, having *cloathed* them first with sweet and dry *Moss*; but upon all *warm* and benign *emissions* of the *Sun* and sweet *showers*, giving them *air*, by taking off all that covers them. Thus you shall preserve your *costly* and precious *Marum Syriacum*, *Cistus's*, *Geranium nocte olens*, *Flos Cardinalis*, *Marcoes*, seedling *Arbutus's* (a very hardy Plant when greater) choicest *Ranunculus's* and *Anemonies*, *Acacia Ægypt.* &c. Thus governing them till *April.* Secrets not till now divulged. *Sept. Part.*

Note, that *Cats* will eat and destroy your *Marum Syriacum*, if they can come at it, therefore guard it with a *Furse*, or *Holybranch.*

Flowers in *Prime*, or yet *lasting.*

Amaranthus tricolor, and others; *Anagallis* of *Portugal*, *Antirrhinum*, *African flo. Amomũ Plinii*, *After Atticus*, *Belvedere*, *Bellis*, *Campanula's*, *Colchicum*, *Autumnal Cyclamen*, *Clematis*, *Chrysanthemum angustifol. Eupatorium* of *Canada*, *Sun-flower*, *Stock gil. flo. Geranium Creticum*, and *nocte olens*, *Gentianella annual*, *Hieracion minus Alpestre*, *Tuberous Indian Jacynth*, *Linaria Cretica*, *Lychnis Constant.* single and double; *Limonium*, *Indian Lilly*, *Narciss. Pomum Aureum*, and *Amoris*, *& Spinosum Ind.* Marvel of *Peru*, *Millefolium* yellow, *Moly Monspelienſ Nasturtium Indicum*, *Perſian Autumnal Narcissus*, *Virginian Phalangium*, *Indian Phaseolus*, *Scarlet Beans*, *Convolvulus diverſ. gen.*

gen. Candy-tufts, Veronica, purple *Volubilis, Asphodil, Crocus,* or English *Saffron, Garnsey Lilly,* or *Narcissus* of *Japan, Poppy* of all colours, single, and double, *Malva arborescens, Indian Pinks, Æthiopick Apples, Capsicum Ind. Gilly-flowers, Passion flower, Dature* double and single, *Portugal Ranunculus's, Spanish Jasmine,* yellow *Virginian Jasmine, Rhododendron* white and red, *Oranges, Myrtles, Balaustia, Musk Rose,* and *Monthly Rose,* &c. Sept. Part.

m

OCTOBER

Hath xxxj days, long—10h—47m

Sun rises 06h—26m Sets 05h—24m

To be done

In the *Orchard*, and *Olitory-Garden.*

Trench Grounds for *Orcharding*, and the *Kitchin garden*, to lie for a *Winter* mellowing.

Plant dry *Trees* (i.) *Fruit* of all sorts, *Standard*, *Mural*, or *Shrubs* which lose their *leaf*; and that so soon as it *falls*: But be sure you chuse no *Trees* for the *Wall* of above *two* years *Graffing* at the most *sound* and *smooth.*

Now is the time for *Ablaqueation*, and laying *bare* the *Roots* of old

old *unthriving*, or over-*haſty* *blooming* Trees. *Octob. Olit.*

Moon now *decreaſing*, gather *Winter fruit* that remains, weather dry; take heed of *bruiſing*; lay them up *clean* leſt they *taint*; *Cut* and prune *Roſes* yearly, reducing them to a *Standard* not over tall.

Plant and Plaſh *Quick ſets.*

Remove *Graffs* after the ſecond year, unleſs *Dwarffs*, which you may let ſtand till the third.

Save, and ſow all *ſtony* and hard *Kernels* and *Seeds*; ſuch as black *Cherry*, *Morellos*, black *Heart*, all good; *Pear-plum*, *Peaches*, *Almond ſtones*, &c. Alſo *Nuts*, *Haws*, *Aſhen*, *Sycomore*, and *Maple* keys; *Acorns*, *Beech-maſt*, *Apple*, *Pear*, and *Crab* kernels for *Stocks*; or you may defer it till the next *Month* towards the latter end, keeping them dry, and free from muſtineſs; remembring to cover the Beds with *Littier.*

You may yet ſow *Genoa Let-*

Octob. Olit.

* *Especially under* glass-bells *with a little straw over them, when the hard* frosts *come; but then touch them not till they thaw, lest you crack the* glasses.

tuce, which will last all the * *Winter, reddish*, &c.

Make Winter *Cider* and *Perry*.

Towards the latter end, plant *Abricots, Cherries, Plums, Vines, Winter-pears*, &c.

Fruits in *Prime*, or yet *lasting*.

Apples.

Belle-et-Bonne, William, Costard, Lording, Parsley-apples, Pearmain, Pear-apple, Honey meal, Apis, &c.

Pears.

The *Caw-pear* (baking) *Greenbutter-pear, Thorn-pear, Clove-pear, Rousel pear, Lombart-pear, Ruffet-pear, Saffron-pear*, and some of the former *Month, Violet-pear, Petworth-pear*, otherwise called the *Winter Windsor*.

Bullis, and divers of the *September Plums* and *Grapes, Pines, Arbutus*, &c.

OC-

m

OCTOBER

Hath xxxj days, long—10h—47m

Sun riſes 6h—26m—Sets 5h 24m

To be done

In the *Parterre*, and *Flower-Garden.*

NOw your *Narciſſus Tuberoſe* not enduring the *wet*, muſt be ſet into the *houſe*, and preſerved very *dry* till *April.*

Continue *ſowing* what you did in *September* if you pleaſe: Likewiſe *Cypreſs* may be ſown, but take heed of the *Froſt. Vide* Mar. Alſo,

You may *plant* ſome *Anemonies*, eſpecially the *Tennifolia's*, and *Ranunculus's*, in freſh, *ſandiſh earth*, taken from under the *Turf*, but

Octob. Part. but lay richer *Mould* at the *bottom* of the *Bed*, which the *Fibres* may reach, but not to touch the main *roots*, which are to be cover'd with the *natural Earth* two inches deep: and so soon as they appear, secure them with *Mats* or dry *Straw*, from the *winds* and *frosts*, giving them *air* in all benign *intervals*, if possible *once* a day.

Plant also *Ranunculus's* of *Tripoly*, *Vernal Crocus's*, &c. Remove seedling *Holly-hocks*, or others.

Plant now your choice *Tulips*, &c. which you feared to *inter* at the beginning of *September*; they will be more secure, and forward enough: but plant them in *natural earth* somewhat *impoverished* with very fine *sand*; else they will soon lose their *variegations*; some more *rich earth* may lie at the *bottom*, within reach of the *fibres* (as above:) Now have a care your *Carnations* catch not too much *wet*; therefore retire them to *covert*,

vert, where they may be kept from the *Ruin*, not the *Air*, or lay them on the ſides, trimming them with *freſh Mould*. *Octob. Part.*

All ſorts of *Bulbous Roots* may now alſo be ſafely *buried*; likewiſe *Iris's*, &c.

You may yet ſow *Alaternus* and *Phillyrea* ſeeds: It will now be good to *Beat*, *Roll*, and *Mow Carpet walks* and *Cammomile*; for now the ground is *ſupple*, and it will *even* all *inequalities*. Finiſh your laſt *Weeding*, &c.

Sweep and cleanſe your *Walks*, and all other *places*, from *Autumnal leaves* fallen, leſt the *Worms* draw them into their *holes*, and foul your *Gardens*, &c.

Flowers in *Prime*, or yet *laſting*.

Amaranthus tricolor, &c. *Aſter Atticus*, *Amomums*, *Antirrhinum*,

Octob. Part. *rhinum, Colchicum, Saffron, Cyclamen, Clematis, Heliotrops, Stockgilly-flo. Geranium triste, Ind. Tuberose Jacinth, Limonium, Lychnis* white and double, *Pomum Amoris* and *Æthiop. Marvel* of Peru, *Millefol. luteum, Autumnal Narciss. Pansies, Aleppo Narciss. Spherical Narciss. Nasturt. Persicum, Gilly-flo. Virgin. Phalangium, Piloscella, Violets, Veronica, Arbutus, Span. Jasmine,* and yellow *Ind. Jasmine,* Monthly *Rose, Oranges, Myrtles, Balaust.*

NOVEM-

♐

NOVEMBER

Hath xxx days, long—08h—52m

Sun rises 07h—34m Sets 04h—26m

To be done

In the *Orchard*, and *Olitory-Garden.*

CArry *Compost* out of your *Melon-ground*, or turn and *mingle* it with the *earth*, and lay it in *Ridges* ready for the *Spring*: Also *trench* and fit ground for *Artichokes*, *&c.*

Continue your *Setting* and *Transplanting* of *Trees*; lose no time, hard *Frosts* come on a pace: Yet you may lay *bare* old *Roots*.

Plant young Trees, *Standards*, or *Mural*.

Furnish

Nov. Olit. Furnish your *Nursery* with *Stocks* to *graff* on the following year.

Sow and *set* early *Beans* & *Pease* till *Shrove-tide*; and now lay up in your *Cellars* for *spending*, and for *seed*, to be *transplanted* at *Spring*, *Carrots*, *Parsneps*, *Turneps*, *Cabbages*, *Caully-flowers*, &c.

Cut off the *tops* of *Asparagus*, and *cover* it with *long dung*, or make *Beds* to *plant* in *Spring*, &c.

Now, in a *dry* day, gather your last *Orchard fruits*.

Take up your *Potatoes* for *Winter* spending, there will enough remain for *Stock*, though never so exactly gathered.

Fruits in *Prime*, or yet *lasting*.

Apples.

THe *Belle-bonne*, the *William*, Summer *Pearmain*, *Lording-apple*,

pple, Pear-apple, Cardinal, Win- *Nov. Olit.*
er *Cheſtnut, Shortſtart, &c.* and ſome other of the former *two* laſt *Months,* &c.

Pears.

Meſſire Jean, Lord-pear, long *Bargamot, Warden* (to bake) *Burnt-cat, Sugar-pear, Lady-pear, Ice-pear, Dove-pear, Deadmans-pear, Winter Bargamot, Bell-pear,* &c.

Arbutus, Bullis, Medlars, Services.

NOVEM-

Nov. Olit.

1

NOVEMBER

Hath xxx days, long —08h—52m

Sun rises 07h—34m Sets 04h—26m

To be done

In the *Parterre*, and *Flower-Garden.*

SOw *Auricula* seeds thus; prepare very *rich earth*, more than half dung, upon that *sift* some very light *sandy Mould*, and the *Earth* gotten out of old hollow *Willow-trees*; and then *sow*: set your *Cases* or *Pans* in the *Sun* till *March* or *April.*

Cover your peeping *Ranunculus's*, &c. And see the Advice in *March* for *Ever-green Seedlings*; especially if long *Snows* and bitter *Winds* be feared. Now

Now is your best *season* (the weather *open*) to *plant* your fairest *Tulips* in places of *shelter*, and under *Espaliers*; but let not your *earth* be too *rich*: *Vide October. Transplant* ordinary *Jasmine*, &c. *Nov. Part.*

About the *middle* of this *Month* (or sooner, if *weather* require) quite *enclose* your *tender* Plants, and *perennial Greens*, *Shrubs*, &c. in your *Conservatory*, secluding all entrance of *cold*, and especially sharp *winds*; and if the *Plants* become exceeding *dry*, and that it do not actually *freeze*, refresh them *sparingly* with *qualified water*, (i.) mingled with a little *Sheeps* or *Cow-dung*: If the *season* prove exceeding piercing (which you may know by the *freezing* of a *dish* of *water*, or moistned *cloth*, set for that purpose in your *Green-house*) kindle some *Charcoals*, and when they have done smoaking, put them in a *hole* sunk a little into the *floor* about the middle of it. This is

Nov. Part. the safest *Stove*: At all other times, when the *Air* is warm'd by the *beams* of a fine *day*, and that the *Sun* darts full upon the *house*, without the least *wind* stirring, shew them the light; but inclose them again before the *Sun* be gone off: Note, That you must never give your *Aloes* or *Sedums* one drop of *water* during the whole *winter*: And indeed, you can hardly be too sparing of *water* to your *hous'd Plants*; the not observing of *this*, destroyes more *Plants* than all the rudenesses of the *season*. To know when they want refreshing, consider the *leaves*; if they *shrivel* and *fold up*, give them *drink*; if *pale* and *whitish*, they have already too much; and the defect is at the *roots*, which are in peril of rotting. If your *Aloes* grow manifestly too dry, expose it a while to the *Air*, when clear, 'twill immediately recover them; but give them not a drop of

of *water* how dry soever their *Pots* be. *Nov. Part.*

House your choicest *Carnations*, or rather set them under a *Pent-house* against a South-wall, so as a *Covering* being thrown over them to preserve them in extremity of *weather*, they may yet enjoy the freer *Air* at all other times.

Prepare also *Mattrasses*, *Boxes*, *Cases*, *Pots*, &c. for *shelter* to your tender *Plants* and *Seedlings* newly sown, if the *weather* prove very bitter.

Plant *Roses*, *Althæa frutex*, *Lilac*, *Syringas*, *Cytisus*, *Pæonies*, &c.

Plant also *Fibrous roots*, specified in the precedent *Month*.

Sow also *stony seeds* mentioned in *October*.

Plant all *Forest-trees* for *Walks*, *Avenues*, and *Groves*.

Sweep and cleanse your *Garden-walks*, and all other places, from *Autumnal* leaves, the last time.

Flowers in *Prime*, or yet *lasting.*

Anemonies, Meadow Saffron, Antirrhinum, Stock-gilly-flo. Bellis, Clematis, Panſies, ſome *Carnations,* double *Violets, Veronica, Spaniſh* and *Indian Jaſmine, Myrtles, Musk Roſe,* &c.

DECEM-

♑

DECEMBER

Hath xxxj days, long—07^{hr}—40^{m}

Sun rises 08^{h}—10^{m} Sets 03^{h}—50^{m}

To be done

In the *Orchard*, and *Olitory-Garden.*

PRune, and Nail *Wall fruit*, (which yet you may defer a *Month* or two longer) and *Standard-trees.*

You may now plant *Vines*, &c.

Also *Stocks* for *Graffing*, &c.

Sow, as yet, *Pomace* of *Cider-pressings* to raise *Nurseries*; and set all sorts of *Kernels*, *Stones*, &c.

Sow for early *Beans* and *Pease*, but take heed of the *Frosts*; therefore *surest* to defer it till

Dec. Olit. after *Christmas*, unless the *Winter* promise very *moderate*.

All this *Month* you may continue to *Trench* Ground, and *dung* it, to be ready for *Bordures*, or the planting of *Fruit-trees*, &c.

Either late in this *Month*, or in *January*, prune and cut off all your *Vine shoots* to the very *Root*, save *one* or *two* of the stoutest, to be left with three or four *eyes* of *young Wood*. This for the *Vineyard*.

Now *seed* your *weak Stocks*.

Turn and *refresh* your *Autumnal Fruit*, lest it *taint*, and open the *Windows* where it lies, in a clear and *serene* day.

Fruits in *Prime*, and yet *lasting*.

Apples.

Rousseting, *Leather-coat*, Winter *Reed*, *Chestnut* Apple, *Great-*

Great-belly, the *Go-no-further*, or *Cats-head*, with some of the precedent *Month*. Dic. Olit.

Pears.

The *Squib-pear*, *Spindle-pear*, *Doyonere*, *Virgin*, *Gascogne-Bergomot*, *Scarlet-pear*, *Stopple-pear*, white, red, and *French Wardens*, (to bake or roast) *&c.* the Deadmans *Pear*, excellent, *&c.*

♑

DECEMBER

Hath xxxj days, long—07^{h}—40^{m}

Sun rises 8^{h}— 10^{m}— Sets 3^{h} 50^{m}

To be done

In the *Parterre*, and *Flower-Garden.*

AS in *January*, continue your *hostility* against *Vermine.*

Preserve from too much *Rain* and *Frost*, your choicest *Anemonies*, *Ranunculus's*, *Carnations*, &c.

Be carefull now to keep the *Doors* and *Windows* of your *Conservatories* well *matted*, & guarded from the piercing *Air*: for your *Oranges*, *&c.* are now put to the *test.* Temper the *cold* with a few *Charcoal* governed as directed

directed in *November*; but never accuſtom your *Plants* to it, unleſs the *utmoſt* ſeverity of the *ſeaſon* require; therefore, if the *place* be exquiſitely *cloſe*, they will even *then* hardly require it, *&c.* *Dec. Part.*

Set *Bay-berries*, &c. dropping ripe.

Look to your *Fountain-Pipes*, and cover them with freſh and *warm Littier* out of the *Stable*, a good *thickneſs*, leſt the *froſts* crack them; remember it in *time*, and the *Advice* will ſave you both trouble and charge.

Flowers in *Prime*, and yet *laſting*.

Anemonies ſome, *Perſian* and *Common* Winter *Cyclamen*, *Antirrhinum*, *Black Hellebore*, *Laurus tinus*, ſingle *Primroſes*, *Stock-gilly-flo. Iris Cluſii*, *Snow-flowers* or *drops*, *Tucca*, &c.

For

FOr by such a *Kalendar* it is that a *Royal Garden* or *Plantation* may be contrived, according to my Lord *Verulam*'s design, *pro singulis Anni Mensibus*, for every *Month* of the *Year*.

But, because it is in this *cold season*, that our *Gard'ner* is chiefly diligent about preserving his more *tender*, *rare*, *exotic*, and *costly Shrubs*, *Plants*, and *Flowers*; We have thought fit to add the *Catalogue*, as it is (much after this sort) *collected* to our hands, by the *Learned* and Industrious Doctor *Sharrock* (though with some *reformation* and *improvement*) of all *such*, as according to their different *Natures*, do require *more* or *less* indulgence: And these we have distributed likewise into the *three* following *Classes*.

I.

I. CLASSE.

Being leaſt *patient* of *Cold*, and therefore to be *firſt* ſet into the *Conſervatory*, or other ways defended.

Acacia Ægyptiaca, Aloe American. Amaranthus tricolor, Aſpalathus Cret. Balſamum, Helichryſon, Chamelæa tricoccos, Naſturtium Indicum, Indian Narciſſus, Ornithogalon Arab. Ind. Phaſeol. Capſicũ Ind. Pomum Æthiop. Aureum, Spinoſum, Summer *Sweet Marjoran*, the two *Marums Syriac.* &c. *Dactyls, Piſtacio's*, the great *Indian Fig, Lylac flo. Alb. Lavendula Multif. Cluſ. Ciſtus Raguſæus flo. alb. Colutea Odorata, Cretica, Narciſſus Tuberoſus, Styrax Arbor*, &c.

II.

II. CLASSE.

Enduring the second degree of *Cold*, and accordingly to be *secured* in the *Conservatory*.

Momum Plinii, Carob. Chamelæa Alpestris; *Cistus Ledon Clus. Citron*, *Vernal Cyclamen*, Summer *Purple Cyclamen*, *Digitalis*, *Hispan. Geranium triste*, *Hedysarum Clypeatum*, *Aspalathus Creticus*, *Spanish Jasmine*, *Virgin. Jasmine*, *Suza Iris*, *Jacobæa Marina*, *Alexandrian Laurel*, *Oleanders*, *Limonium elegans*, *Myrtles*, *Oranges*, *Lentiscus. Levantine tufted Narcissus*, *Gill. flo.* and choicest *Carnations*, *Phalangium Creticum*, *Asiatic* double and single *Ranunculus's*, *Narcissus* of *Japan*, *Cytisus rubra*, *Canna Indica*, *Thymus Capitatus*, *Verbena nodi flo. Cretica*, &c.

III.

III. CLASSE.

Which not *periſhing* but in exceſſive *Colds*, are therefore to be *laſt* ſet in; or rather *protected* under *Mattreſſes*, and ſlighter *Coverings*, abroad in the *Earth*, *Caſes*, *Boxes*, or *Pots*, &c.

Abrotonum maſ. fœm. Winter *Aconite*, *Adiantum Verum*, *Bellis Hiſpan. Calceolus Mariæ*, *Capparis*, *Cineraria*, *Cneorum Matthioli*, *Cytiſus Maranthæ*, *rub. Lunatus*, *Eryngium planum totum cæruleum*, *Fritillaria mont. Geniſta Hiſpan. flo. alb. Pomegranads*, *Orient. Jacynth*, *Bulbous Iris*, *Laurels*, *Cherry Laurel*, *Lychnis* double white, *Matricaria* double flo. *Olives*, *Pancration*, *Papaver ſpinoſiſſ. Marcoc*, *Roſemary*, *Siſynrichium*, *Turpentine-*

Turpentine-tree, Teuchrium mas Tithymal. Myrtifol. Veronica doub. flo. ſingle *Violets, Lavender, Serpentaria trifol.* &c. *Ornithogalon Arab.* white and doub. *Narciſſus* of *Conſtantinople*, late *Pine-apples, Moly, Perſian Jaſmine, Opuntia*, or the ſmaller *Indian Fig, Jucca, Seſeli Æthiop. Agnus Caſtus, Malva Arboreſcens, Ciſtus maſ. Althea Frutex, Sarſaparilla, Cupreſſus, Crithmum marinum*, &c.

And to *theſe* might ſome others be *added*; but we conceive them *ſufficient*, and more than (we fear) ſome *envious* and *mercenary Gard'ners* will thank us for; but they deſerve not the *name* of that *Communicative* and noble *Profeſſion*: However, *this*, as a *Specimen* of our *Affection* to the *Publick*; and in *Commiſeration* of divers *Honourable* and Induſtrious *Perſons*, whoſe *Inclination* to this *innocent Toil*, has made them ſpare

no

no *Treaſure*, or *Pains* for the *Furniture* of their *Parterres* with *variety*; the *miſcarriage* whereof being ſometimes *univerſal* to the *Curious*, has made us the more *freely* to *impart* both what we have *experimentally* learned by our own *Obſervations*, and from *others* of undoubted *Candor* & *Ingenuity*: But of *this*, we promiſe a more ample *Illuſtration*, as it concerns the entire *Art*, together with all its *Ornaments* of *Uſe* and *Magnificence*, as theſe *endeavours* of ours ſhall find *entertainment* and *opportunity* contribute to the *Deſign*.

FINIS.

Turpentine tree, Teuchrium mas Tithymal. Myrtifol. Veronica doub. flo. ſingle *Violets, Lavender, Serpentaria trifol.* &c. *Ornithogalon Arab.* white and doub. *Narciſſus* of *Conſtantinople*, late *Pine-apples, Moly, Perſian Jaſmine, Opuntia*, or the ſmaller *Indian Fig, Jucca, Seſeli Æthiop. Agnus Caſtus, Malva Arboreſcens, Ciſtus maſ. Althæa Frutex, Sarſaparilla, Cupreſſus, Crithmum marinum*, &c.

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no

no *Treasure*, or *Pains* for the *Furniture* of their *Parterres* with *variety*; the *miscarriage* whereof being sometimes *universal* to the *Curious*, has made us the more *freely* to *impart* both what we have *experimentally* learned by our own *Observations*, and from *others* of undoubted *Candor* & *Ingenuity*: But of *this*, we promise a more ample *Illustration*, as it concerns the entire *Art*, together with all its *Ornaments* of *Use* and *Magnificence*, as these *endeavours* of ours shall find *entertainment* and *opportunity* contribute to the *Design*.

FINIS.

THE TABLE.

IT might seem impertinent to have added a *Table* to a *Book* of so small a *Volume*, and which seems to be it self but a *Table*: But since it may prove advantagious for the saving of *time*, at *once* to learn the whole *Culture* of any *Plant*, as the *particulars* are sprinkled through the several *Pages*; the *Author* has thought it fit to *collect*, and annex it to the foot of his *Kalendar*.

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At a Meeting of the Council of the *Royal Society*, *June* 24. 1675.

Ordered,

THAT *a Discourse, made before the* Royal Society *the* 29th *of* April, *and* 13th *of* May 1675. *by* John Evelyn *Esquire, concerning Agriculture, be printed by the Printer of the said Society.*

BROUNCKER P.R.S.

A Philoſophical Diſcourſe OF EARTH,

Relating to the *Culture* and *Improvement* of it for *Vegetation*, and the *Propagation* of *Plants*, *&c.* as it was preſented to the *Royal Society*, *April* 29. 1675.

By *J. Evelyn* Eſq; *Fellow* of the ſaid *SOCIETY.*

Πόλλακι τοι κηπωρὸς ἀνὴρ κατακαίριον εἶπε.

LONDON,
Printed for *John Martyn*, Printer to the *Royal Society*. 1676.

To the *Right Honourable* My *Lord* Viſcount *Brouncker, &c.* Preſident of the *Royal Society, &c.*

My Lord,

I *Have in obedience to your* Lordſhip, *and the irreſiſtible* Suffrages *of that* Society *over which you* preſide, *reſign'd theſe* Papers *to be diſpos'd of, as you think fit: I hear your* Lordſhips *ſentence is, they ſhould be made* Publick. *Why ſhould not a thouſand Things of infinitely more value, daily enriching their* Collection (*and*

which would better justifie the laudable progress of that Assembly) *be oftner produc'd, as some of late have been?* This, *my* Lord, *would obviate all unkind* Objections, *and cover the* Infirmities *of the present* Discourse, *with things indeed worthy its* Institution. *But, as I am to obey your* Lordships *Commands, so both your* Lordship *and the* Society *are redevable for publishing the* Imperfections *of*

My Lord,

Your Lordships

and Their *most obedient* Servant

J. EVELYN.

A

Philoſophical Diſcourſe

OF

EARTH.

I AM call'd upon, by Command from your *Lordſhip*, and the Council, who direct the progreſs of the *Royal Society* (and as in courſe it falls) to entertain this Illuſtrious Aſſembly with ſomething, which being either deduced from, or leading to *Philoſophical Experiment*, may be of real uſe, and ſutable to the deſign of its Inſtitution.

I am highly ſenſible, as of the honour which is done me, ſo of the great diſadvantages I lye under, for want of abilities to carry

me through an undertaking of this importance, and before ſuch acute and learned Judges; but I hope, my obedience to your Commands, and, at leaſt, endeavours, will cover thoſe defects for which I can make no other Apology.

There are few here, I preſume, who know not upon how innocent and humble a ſubject I have long ſince diverted my thoughts; and therefore, I hope, they will not be diſpleaſed, or think it unworthy of their patience, if from their more ſublime and noble ſpeculations (and which do often carry them to converſe among the brighter Orbs, and Heavenly Bodies) they deſcend a while, and fix their eyes upon the *Earth*, which I make the preſent Argument of my Diſcourſe. I had once indeed pitch'd upon a Subject of ſomewhat a more brisk and lively nature; for what is there

there in Nature so sluggish and dull as Earth? What more spiritual and active than *Vegetation*, and what the Earth produces? But *this*, as a Province becoming a more steady hand, and penetrating wit, than mine to cultivate (unless where it transitorily comes in my way to speak of *Salts* and *Ferments*) I leave to those of this learned Society, who have already given such admirable Essays of what they will be more able to accomplish upon that useful and curious Theme; and therefore I beg leave, that I may confine my self to my more proper Element, the *Earth*, which though the lowest, and most inferiour of them all, is yet so subservient, and necessary to Vegetation, as without it there could hardly be any such thing in Nature.

To begin, I shall in the first place then describe, what I mean by

by *Earth*; then I shall endeavour to shew you the *several sorts* and kinds of Earth; and lastly, how we may best *improve* it to the Uses of the *Husbandman*, the *Forester*, and the *Gardner*, which is indeed of large and profitable extent, though it be but poor and mean in sound, compar'd to Mines of Gold and Silver, and other rich *Ores*, which likewise are the Treasures of the Earth, but less innocent and useful.

I intend not here to amuse this noble Audience, or my self, with those nice enquiries, concerning what the real *Form* of that Body, or Substance is, which we call *Earth*, denudated and stripp'd of all *Heterogeneity*, and reduc'd to its principles, as whether it be compos'd of sandy, central, nitrous, or other Salts, Atoms, and Particles? Whether void of all qualities but dryness, and the like (as they commonly enter into

into the ſeveral definitions of *Philoſophers*,) nor of what Figure and Contexture it conſiſts, which cauſes it to adhere and combine together, ſo as to affirm any thing dogmatically thereupon; much leſs ſhall I contend, whether it be a *Planet* moving about the *Sun*, or be fixt in the Center of the Univerſe; all which have been the curious reſearches and velitations of our later Theoriſts, but content my ſelf with that Body or Maſs of Gleab, which we both dwell on, and every day cultivate for our neceſſary ſubſiſtance, as it affords us *Corn*, *Trees*, *Plants*, and other *Vegetables* of all ſorts, uſeful for humane life, or the innocent refreſhments of it.

Thoſe who have written *de Arte Combinatoria*, reckon of no fewer than One hundred ſeventy nine millions one thouſand and ſixty different ſorts of Earths; but of all this enormous number, as

of

of all other good things, it ſeems they do not acquaint us with above eight or nine eminently uſeful to our purpoſe; and truly, I can hardly yet arrive at ſo many. Such as I find naturally and uſually to riſe from the Pit, I ſhall here ſpread before you in their order.

The moſt beneficial ſort of Mould or Earth, appearing on the ſurface (for we ſhall not at preſent penetrate lower than is neceſſary for the planting and propagation of Vegetables) as it conſiſts of a mixt body, is the *natural* (as I beg leave to call it) *under-turf-Earth*, and the reſt which commonly ſucceeds it, in *ſtrata's*, or layers, 'till we arrive to the barren, and impenetrable Rock, be it fat or lean, *Loam*, *Clay*, *Plaſtic*, *Figuline*, or *Smectic*; as *Chalk*, *Marle*, *Fullers-Earth*, *Sandy*, *Gravelly*, *Stony*, *Rock*, *Shelly*, *Coal*, or *Mineral*; ſuch

ſuch as with the Ancients were the *Creta*, *Argilla*, *Smectica*, *Tophacea*, *Pulla*, *Alba*, *Rufa*, *Columbina*, *Macra*, *Carioſa*, *Rubrica* (I name them promiſcuouſly) to be found in the old *Geoponic* Authors, to whom I refer the Critical.

Moſt, or all, of theſe lying (as I affirm'd) in Beds, one upon another, from ſofter to harder, better to worſe, uſually determine in Sand, Gravel, Stone, Rock, or Shell, which *laſt* we frequently meet with in Marſh and Fenny Delves, and ſometimes even at the foot of high Mountains, after divers ſucceſſions of different Moulds.

I begin with what commonly firſt preſents it ſelf under the removed Turf, and which, for having never been violated by the Spade, or received any foreign mixture, we will call the *Virgin-Earth*; not that of the *Chymiſts*, but

but as we find it lying about a foot deep, more or leſs, in our Fields, before you come to any manifeſt alteration of colour or perfection. This ſurface-Mould is the beſt, and ſweeteſt, being enriched with all that the Air, Dews, Showers, and Celeſtial Influences can contribute to it: For 'tis with good Earth, as with excellent Water, that's the beſt, which with leaſt difficulty receives all external qualities; for the fatneſs of this Under-turf Mould, being drawn up by the kindly warmth of the Sun to its ſuperficies, ſpends but little of its vigour in the Graſs and tender verdure which it produces, and eaſily nouriſhes without diſſipating its virtue, provided no rank Weeds, or predatitious Plants (conſummating their Seeds) be ſuffered to grow and exhauſt it; but maintains its natural force, and is therefore of all other un-

cultivated

cultivated Earths, the moſt grateful to the Husbandman.

Now as the reſt of incumbent and ſubjacent Earths approach this in virtue, ſo are they to be valued; and of theſe there are ſeveral kinds, diſtinguiſhable by their ſeveral conſtitutions: The beſt of which is *black*, *fat*, yet porous, light, and ſufficiently tenacious, without any mixture of Sand or Gravel, riſing in pretty groſs Clods at the firſt breaking up of the Plow; but with little labour and expoſure falling to pieces, but not crumbling altogether into Duſt, which is the defect of a more vicious ſort. Of this excellent *black* Mould (fit almoſt for any thing without much manure) there are three kinds, which differ in hue and goodneſs.

The next layer in *ſeries* to this, is uſually mixt with a ſprinkling of Stones, ſomewhat hard, yet friable,

friable, and when well aired and stirred, is not to be rejected; the looseness of it, admitting the refreshment of showers, renders it not improper for Trees and Plants which require more than ordinary Moistures. Declining from this in perfection, is the *darkish-Gray*, or *Tawny*, which, the deeper you mine, rises vein'd with yellow, and sometimes reddish, till it end in pale; and if you penetrate yet farther, commonly in Sand, and a gritty stone.

Of a second *Class*, is Mould of an obscure Colour also, more delicate grain, tender, chessum and mellow; clear of stones and grittiness, with an eye of *Lome* and *Sand*, which renders it light enough, yet moist, of all other the most desirable for *Flowers* and the *Coronary Garden*.

To this we add, a yet more obscure, and sandy Mould, accompanied with a natural fattiness,

neſs, and this, though rarer, is incomparable for almoſt any ſort of Fruit-Trees.

A third participates of both the former, fattiſh, yet interſperſed with ſmall Flints and Pebbles; not to be altogether neglected.

A fourth is totally ſandy, and that of divers colours, with ſometimes a bottom of Gravel, now and then Rock, and not ſeldom Clay; and, as the foundations are, ſo is it more or leſs retentive of moiſture, and tolerable for Culture: But all Sand does eaſily admit of Heat and Moiſture, and yet for that not much the better; for either it diſmiſſes and lets them paſs too ſoon, and ſo contracts no ligature; or retains it too long; eſpecially where the bottom is of Clay, by which it parches, or chills, producing nothing but Moſs, and diſpoſes to *Cancerous* infirmities: But

if, as ſometimes it fortunes, that the Sand have a ſurface of more genial mould, and a *ſund* of Gravel or looſe ſtone; though it do not long maintain the virtue it receives from Heaven; yet it produces as forward ſpringing, and is parent of ſweet Graſs, which, though ſoon burnt up in dry weather, is as ſoon recover'd, with the firſt rain that falls.

Of pure and *ſheere-Sand*, there's white, black, blewiſh, red, yellow, harſher, and milder, and ſome meer duſt in appearance, none of them to be deſired alone; but the grey-black, and aſh colour'd, and that which frequently is found in heathy Commons, or the travelling kind, volatile, and exceeding light, is the moſt inſipid, and worſt of all. I do not here ſpeak of the Sea-Sands, which is of admirable virtue, and uſe in mixtures, and to be ſpread on ſome lands, becauſe it has been

been deſcrib'd ſo accurately already in a juſt diſcourſe, upon another occaſion, by an experienced Gentleman, dwelling in the Weſtern parts, where this Manure is perfectly underſtood, and recommended to more general uſe.

As of Sands, ſo are there as different ſorts of *Clays*, and of as different colours, whereof there is a kind ſo obſtinate and ill-natured, as almoſt nothing will ſubdue it, and another ſo voracious and greedy, as nothing will ſatiate, without exceeding induſtry, becauſe it ungratefully devours all that is applyed to it, turning it into as arrant Clay as it ſelf: Some Clays are more pinguid than other; ſome more ſlippery; all of them tenacious of Water on the ſurface, where it ſtagnates and chills the plant, without penetrating, and in dry ſeaſons coſtive, and hardening

with the Sun and Wind, moſt of them pernicious, and untractable.

The unctuous and fatter Clay frequently lyes upon the other, having oftentimes a baſis of Chalk beneath it; but neither is this worth any thing, 'till it be looſened, and rendred more kind, ſo as to admit of the air and heavenly influences.

I had almoſt forgotten *Marſh-Earths*, which though of all other, ſeemingly, the moſt churliſh, a little after 'tis firſt dug, and dryed (when it ſoon grows hard, and chaps,) may with labour, and convenient expoſure, be brought to an excellent temper; for being the product of rich Slime, and the ſediment of Land-Waters, and Inundations, which are uſually fat, as alſo the rotting of Sedge, yea, and frequently of proſtrated Trees, formerly growing in or near them,

and

and in proceſs of time rotted (at leaſt the ſpray of them) and now converted into mould, becomes very profitable Land: But whether I may reckon this among the natural Earths, I do not contend.

Of Loams, and Brick-Earths, we have ſeveral ſorts, and ſome approaching to Clay; others nearer Marle, differing alſo in colour; and if it be not too rude, mingled, in juſt proportion, with other Mold, an excellent ingredient in all ſorts of Earth, and ſo welcome to the Husbandman, and the Gardner eſpecially, as nothing does well without a little daſh of it.

Of *Marle* (of a cold ſad nature) ſeldom have we ſuch quantities in Layers, as we have of the forementioned Earths; but we commonly meet with it in places affected to it, and 'tis taken out of Pits, at ſeveral depths, and of divers colours, red, white,

grey, blue, all of them unctuous, of a ſlippery nature, and in goodneſs, as being pure and immixt, it ſooner relents after a ſhower, and when dryed again, ſlackens and crumbles into duſt, without induration, and growing hard again.

Laſtly, *Chalk*, which is likewiſe of ſeveral kinds and colours, hard, ſofter, fine, courſer, ſlippery and marly, and apt to diſſolve with the weather into no unprofitable Manure: Some of them have a Sandiſh, others a blacker and light ſurface; and there is a ſort which produces ſweet Graſs, and Aromatick Plants, and ſome ſo rank, eſpecially in the Vallies of very high Hills, as to feed not only Sheep, but other Cattel, to great advantage, as we may ſee in divers places among the *Downs* of *Suſſex*. But it has a peculiar virtue above all this, to improve other Lands, as we ſhall come to ſhew.

I forbear to ſpeak particularly of *Fullers-Earth*, *Tobacco Clay*, and the ſeveral tictile *Clays*; becauſe they are not ſo univerſal, and ſerviceable to the Plow and Spade; much leſs of *Terra Lemnia*, *Chia*, *Melita*, *Hetruria*, and the reſt of the *Sigillatæ*; nor of the *Bolus's*, *Rubrics*, and *Okers*, *Figuline*, *Stiptic Smegmatic &c.* as they are diverſly qualified for ſeveral uſes, Medical, and Mechanical; but content my ſelf with thoſe I have already enumerated.

Now beſides the Deſcription and Characters we have given of theſe ſeveral Moulds and Earths, as they reſide in their ſeveral Beds and Couches, there are divers other Indications, by which we may diſcover their qualities and perfections; as amongſt other, a moſt infallible one is, its diſpoſition to melt, and crumble into fine morſels, not turn to Mud

and Mortar, upon the descent of gentle showers, how hard soever it seem before, and if in stirring it rise rather in *granules*, than massy Clods.

If excavating a Pit, the Mould, you exhaust, more than fill it again, *Virgil* tells us 'tis good Augury; upon which *Laurembergius* affirms, that at *Wittemberg* in *Germany*, where the Mould lies so close, as it does not replenish the foss, out of which it has been dug, the Corn which is sown in that Country, soon degenerates into Rye; and what is still more remarkable, that the Rye sown in *Thuringia* (where the Earth is less compacted) reverts, after three Crops, to be Wheat again.

My Lord *Bacon* directs to the observation of the Rain-bow, where its extremity seems to rest, as pointing to a more roscid and fertile Mould; but this, I conceive,

ceive, may be very fallacious, it having two horns, or baſes, which are ever oppoſite.

But the ſituation and declivity of the place is commonly a more certain mark; as what lyes under a Southern, or South-Eaſt riſing-ground; But this is alſo eligible according to the purpoſes you would employ it for; ſome Plants affecting hotter, other colder expoſures; ſome delight to dwell on the Hills, others in the Vallies, and cloſer Seats; and ſome again are indifferent to either; but generally ſpeaking, moſt of them chuſe the warm, and more benign; and the bottoms are univerſally fertile, being the recipients of what the ſhowers bring down to them from the Hills and more elevated parts.

Another infallible indication is the nature, and floridneſs of the Plants which officiouſly it produces;

duces; as where *Thiſtles* ſponta-neouſly thrive; where the *Oak* grows tall and ſpreading; and as the Plant is of kind, ſo to prognoſtic for what Tillage, Layer, or other uſe the ground is proper; *Time*, *Straw berries*, *Betony*, *&c.* direct to Wood; *Camomile*, to a Mould diſpoſed for *Corn*, and I add, to Hortulan furniture; *Burnet*, to Paſture; *Mallows* to Roots, and the like, as my Lord *Verulam* and others obſerve.

On the contrary, ſome ground there is ſo cold, as naturally brings forth nothing but *Gorſe*, and *Broom*, *Holly*, *Yew*, *Juniper*, *Ivy*, *Box*, *&c.* which may happily direct us to the planting of *Pine*, *Firs*, the *Phillyreas*, *Spaniſh Broom*, and other perennial verdures in ſuch places.

Moſs, *Ruſhes*, *Wild Tanſy*, *Sedge*, *Flags*, *Ferne*, *Yarrow*, and where Plants appear wither'd or blaſted, ſhrubby, and curl'd, (which are

are the effects of immoderate wet, heat, and cold interchangeably) are natural auguries of a curſed Soil. Thus as by the Plant we may conjecture of the Mould; ſo by the Mould may we gueſs at the Plant: The more herbaceous and tender, ſpringing from the gentle Bed; the courſe and rougher Plants, from the rude and churliſh: And as ſome Earths appear to be totally barren, and ſome though not altogether ſo unfruitful, yet wanting ſalacity to conceive, vigour to produce, and ſenſibly eluding all our pains; ſo there is other, which is perpetually pregnant, and this is likewiſe a good prognoſtic.

Upon theſe, and ſuch like hints, in propoſals of tranſplanting *ſpices*, and other exotic rarities, from either *Indies*; the curious ſhould be ſtudious to procure of the natural Mould in which they grow (and this might be

be effected to good proportion, by the balaſting of Ships) either to plant, or nouriſh them in from the Seed, till they were of age, and had gained ſome ſtability of roots and ſtem, and become acquainted with the Genius of our *Climate*; or for Eſſays of Mixtures, to compoſe the like.

By the goodneſs, richneſs, hungrineſs and tincture of the Water ſtraining through grounds, and by the weight and ſluggiſhneſs of it, compared with the lighter, conjecture alſo may be made, as in part we have ſhewed.

To conclude, there are almoſt none of our *Senſes*, but may of right pretend to give their verdict here, and firſt,

By the *Odour* or *Smell*, containing (as my Lord *Verulam* affirms) the juice of Vegetables already as it were concocted and prepared; ſo as after long drowths,

drowths, upon the first rains, good and natural Mould will emit a most agreeable scent; and in some places (as *Alonso Barba*, a considerable *Spanish* Author testifies) approaching the most ravishing perfumes; as on the contrary, if the ground be disposed to any Mineral, or other ill quality, sending forth *Arsenical*, and very noxious steams; as we find from our Marshes and Fenny-grounds.

By the *Taste*, and that with good reason; all Earths abounding more or less in their peculiar Salts, as well as Plants; some sweet and more grateful; others bitter, mordacious, or astringent; some flat and insipid; all of them to be detected by percolation of untainted Water through them; though there be who affirm, that the best Earth, like the best Water, and Oyl, has neither Odour, nor Taste.

By

By the *Touch*, if it be *tenera*, fatty, detersive, and slippery, or more asperous, gritty, porous and fryable; likewise, if it stick to the fingers like Bird-lime, or melt and dissolve on the tongue like Butter: Furthermore, good and excellent Earth should be of the same constitution, and not of contrary, as soft and hard; churlish and mild; moist and dry; not too unctuous nor too lean, but resoluble, and of a just and procreative temper, combining into a light, and easily crumbling Mould; yet consistent, and apt to be wrought and kneaded, such as having a *modicum* of Loam naturally rising with it, to entertain the moisture, does neither defile the Fingers, nor cleave much to the Spade, which easily enters it, and such as is usually found under the turf of Pasture-Grounds, upon which Cattel have been long fed and foddered. In a word,

word, that is the beſt Earth to all Senſes, which is blackiſh, cuts like Butter, ſticks not obſtinately, but is ſhort, light, breaking into ſmall Clods, is ſweet, will be temper'd without cruſting or chapping in dry weather, or (as we ſay) becoming Mortar in wet.

Laſtly, by the *Sight*, from all the Inſtances of Colour, and other viſible Indications: For the common opinion is (though long ſince exploded by *Columella*) that all hot, and choleric grounds, are *red* or *brown*; cold and dry, *blackiſh*; cold and moiſt, *whitiſh*; hot and moiſt, *ruddy*; which yet, exhalations from Minerals, the heat of the Sun, and other accidents may cauſe; but generally, they give preeminence to the darker Grays; next, to the Ruſſet; the clear Tawny is found worſe; the light and dark-aſh-colour (light alſo of weight, and reſembling Aſhes) good for nothing;

thing; but the yellowish-red worst of all. And all these are fit to be known, as contributing to noble and useful Experiments, upon due and accurate Comparisons, and enquiry from the several Particles of their Constitutions, Figures, and Modes, as far at least, as we can discover them by the best auxiliaries of *Microscopes*, *Lotions*, *Strainers*, *Calcinations*, *Triturations* and grindings, upon such discovery to judge of their qualities, and by essaying variety of mixtures, and imitating all sorts of Mould, foreign or *Indigen*, to compound Earths as near as may be resembling the natural, for any special or curious use, and be thereby enabled to alter the genius of Grounds as we see occasion.

The consideration of this it was, which gave me the curiosity to fall upon the examining of a Collection I had made of several

tal ſorts both of Earth and Soils, ſuch as I could find about this Territory; whereof ſome I waſhed, to find by what would melt, reſide, or paſs away in the percolation, of what viſible Figure they chiefly ſeemed to conſiſt, armed as I was with an indifferent *Microſcope*, of which be pleaſed to take this brief account.

Gravelly and *Arenous* Earths of ſeveral ſorts, before they were waſhed, appeared to be, moſt of it, rough *Cryſtals*, of which ſome very tranſparent and gemmy; few of them ſharp or angular, but roundiſh; mixed with Atoms and Particles of a mineral hue, which being well dryed, and bruiſed on a hard ſerpentine Stone, and *Mullar* of the ſame, was with little labour reduced to an impalpable whitiſh Sand, untranſparent, as it happens in the bruiſings of moſt, though never

so diaphanous bodies, which may be so reduced.

Yellow Sand had the appearance of Amber; bruised, an untransparent paler Sand.

Fat rich Earth, full of black spots, without much discolouring the water (as hardly did any of the Sands at all) being dryed, was reduced to a delicate sandy Dust, with very little brightness.

Marsh Earth contained a considerable quantity of Sand, the rest resembled the Fat Earth.

The *Under-pasture mould* had likewise a sandy mixture, and what passed with the water after evaporation, seemed to be an impalpable, and very fine untransparent Sand.

Clay consisted of most exceeding smooth and round Sands of several opacous colours.

Potters-Earth, of different sorts, ground small, became like Sand, of

of a yellowiſh grey, and other colours, exceeding polite and ſmooth.

A certain *yellowiſh loamy Earth*, which had been brought to me, with ſome Orange-Trees out of *Italy*, was reduced to a bright ſoft Sand, appearing more gemmy than in the other Loams.

Chalk reſembled fine white Flower, and ſome of it ſparkling, eſpecially the harſher ſort; but the tender, not.

Fullers-Earth appeared like *Gum-tragacanth*, a little wetted, ſeemingly ſwelled, yet gliſtering; but when reduced to a fine duſt, a ſmooth Sand.

Tabacco-Earth, not much bruiſed, was juſt like white Starch; waſhed, and well dryed, it reſembled the whiteſt Flower of Wheat a little candyed: I had not the opportunity of examining the ſeveral ſorts of Marles; and ſo I proceed to the *Dungs*.

Neats-Dung (the Cattel fed only with Fodder, or little Grass, for 'twas in the Winter I made my observations) appeared to be nothing but straws in the entire substance, and colour little altered, save what a certain slippery mucilage gave them, sprinkled with a glistring Sand, like Atoms of Gold; but upon washing and drying again, the tenacious matter vanished, and the straws appeared separated and clear.

Sheeps-Dung was much like the former, only the spires and blades of a fine short grass conglomerated and rolled up in the Pellets, and the glew about it less viscous, but it passed also away in the lotion.

Swines-Dung had the resemblance of dirty Bees Wax, mingled with straws and husks, which seemed like candied *Eringo*, and some like *Angelica* Roots.

The Soil of Horses appeared like

like great wisps of Hay, and little straws, thin of mucilage, and which being washed, was easily to be discerned by a naked Eye.

Dears-Dung much resembled that of Sheeps.

Pigeons-Dung consisted of a stiff glutinous matter, easily reducible to dust of a grey colour, with some husky Atoms, after dilution. Lastly,

The Dung of *Poultry*, was so full of Gravel, small stones, and sand, that there appeared little or no other substance, save a very small portion both of white and blackish viscous matter twisted up together; of all the other, the most fœtid and ill smelling.

These were all I had time and leisure to examine, I cannot say with all the accurateness they were capable of, but sufficiently to encourage the more curious, and to satisfie my self, that the

very finest Earth, and best of Moulds, however to appearance mixt with divers imperfect Bodies, may, for ought we know, consist more of *sandy particles*, than of any other whatsoever; at least, if from this *Criterion* we may be allowed to pronounce, what they seem to the Eye, *Sands*, *Crystals*, or *Salts* (call them what you please;) the consideration of which being so universally the cause of *Vegetation*, was no small inducement to me, to see, if by examining the several Earths, (though but by a cursory inspection) I might possibly detect, what Rudiments of such a *Principle* there were lurking in them, abstractedly taken; not that I opine *Earth* to be *Salt* alone, and nothing else (though perhaps little more besides Sulphur,) for so it produces no Vegetable that I know of, without Water to dissolve and qualifie it

for

for inſumption, and perhaps ſome other matter fitted to receive the Seeds, and keep the Plant ſteady; which yet for ought I can diſcern, is alſo but a finer ſort of Sand, the clammineſs of it being rather ſomething extrinſecal and accidental to it, than any thing natural, and originally conſtitutive: For, the combination of theſe ſeveral Moulds, which gives the ligature, ſlipperineſs, and a divers temper, ſeems rather to be cauſed by the perpetual and ſucceſſive rotting of the Graſs, Plants, Leaves, Branches, Moſs, and other excreſcences growing upon it (than any peculiar or ſolitary principle apart) which in long tract of time, has amaſſed together a ſubſtance *heterogeneous* to the ruder Particles, which after the dilutions of the ſuperficies (that is of the rich and fatter Mould) appears to be little other than *Sand*, or fixed *Salts*, of va-

rious Figures and Colours; ſince even the moſt obdurate and flinty Pebble, beaten and ground to powder, or by Calcination reduced to an impalpable duſt, is as fine both to the Eye, and ſmooth to the touch, as the moſt *Smectic* Earths and *Marles* themſelves; ſuch, at leaſt, as you ſhall collect from the ſubſidence (to appearance) of the moſt Cryſtal Waters, precipitated by deliquated Oyle of *Tartar*, or the like; and the more they be ſubdued and broken, the harder they will prove, if (cleared of their *nitrous* parts) they paſs the Potters Fire, however they ſeemed before to be of different conſtitution: This is evident in Veſſels made of *Tabacco-Clay*, or whatever the material be, which has of late been ſo ſucceſsfully employed, for the finding out of a compoſition (if ſo I may call it) nothing inferiour to the hardeſt

Pour-

Pourcelain, and almoſt as beautiful (by a worthy Member of this Society). Mr. Hook.

But to return to our ſuperficial Earth, which we call the *Mould*, I affirm it to grow and increaſe yearly in depth from the Cauſes aforeſaid; and in ſome places, to that proportion, as to have raiſed no inconſiderable Hills and Eminences, by the accidental fall and rotting of Woods and Trees; ſuch as *Birch*, and *Beech*, &c. which are not of a conſtitution to remain long in the ground (as *Fir*, *Oak*, *Elme*, and ſome other Timber will do, and grow the harder) without corruption, and relenting into Mould as ſoft and tender as what they firſt were ſown or planted in; and of this I am able to give undenyable Inſtances. I inſiſt not here on the perpetual ſucceſſions and generations of *Flints*, and other Stones, in the ſame places, where

where they have been ſedulouſly gathered off, by many (not improbably) thought to proceed from *Worm-caſts*, hardened by the air, and a certain *lapideſcent ſuccus*, or ſpirit, which it meets with: And this, for happening moſt on Downs, very much expoſed (yet undiſturbed) is the more probable; as, on the other ſide, it eſtabliſhes our conjecture of the pureſt Moulds being capable of ſuch a change; that which is thus caſt up by the Worms, being ſo exceedingly elaborated and refined: Therefore let no man be over-confident, that becauſe ſome Earths are ſoft, fat, and ſlippery, they may not poſſibly conſiſt of Sands (of which there are ſo many kinds,) ſince 'tis evident, that even all foſſile Bodies, which can be reduced and brought to ſands, may by contrition of the Particles be rendred ſo minute, as to emulate

emulate the fineſt Earths we have enumerated; the compactedneſs, and accidental mixtures reſulting (as we affirm) from things extrinſecal, not excluding exhalations, paſſage of liquors and ſeveral juices to them, or conveyed by ſubterraneous ſteams and influences; be the Stones or Rock *Glareous*, *Metallic*, *Teſtaceous*, *Salts*, or any other Concretes whatſoever. And what, if we ſhould indeed ſuſpect all Earth to be arrant *Salt*, nay *Glaſs*, and *that* Glaſs, how hard ſoever, the off-ſpring and child of water, the moſt fluid, cryſtalline, ſincere and void of all other qualities? 'tis not impoſſible, I think, but by the different texture of its parts, even that liquid Element may be brought to the conſiſtence of a moſt different body to what it appears: We know, that Water (beſides that it was the firſt immenſe body which inveſted Gen. 1.

vested the *Chaos*) was by some thought to be the Mother of Earth, (nay the *principia soluta* of all mixts whatsoever,) and that the bottom of the Sea was made by a perpetual *Hypostasis* or subsidence, which precipitated from every part of it to the Center. I do not stand to justifie these speculations, but to illustrate what I am about; namely, that Water is apt enough to be condensed and made hard; and crude *Mercury*, and running metal; *Crystals*, *Gems*, and *Pearls*, do more resemble it, than that dirty and opace body, which we usually denominate Earth: Besides we find, how divers Waters, not only indurate and petrifie other substances, but grow into Stones, and leave a rocky *Callus* where they drop and continually pass, and that all sands and stones are not diaphanous; therefore that is no eviction, but that they might

might once have been fluid, ſince their opacity may be adventitious and proceed from ſundry accidents; ſo as granting this *Hypotheſis*, we are leſs to wonder, that this matter is above all other ſo diſpoſed to Vegetation, and apt to produce Plants indued with Colour, Weight, Taſte, Odour, and with ſundry medical and other virtues, as I think that excellent Philoſopher Mr. *Boyle* (an ornament of this *Society*) does ſomewhere make out from the various *Percolations*, *Concoctions*, and *Circulations* of that fruitful *Menſtrue*: And if that be true, that there is but one *Catholic*, *homogeneous*, fluid matter, (diverſified only by *ſhape*, *ſize*, *motion*, *repoſe*, and various *texture* of the minute Particles it conſiſts of; and from which affections of matter, the divers qualities reſult of particular bodies;) what may not mixture,

and

and an attent inſpection into the anatomical parts of the vegetable family in time produce, for our compoſing of all ſorts of Moulds and Soils almoſt imaginable, which is the drift of my preſent Diſcourſe? And why might not *Solomon* by this means have really had all kinds of *Plants* in his incomparable Gardens? even *Ebony*, *Cloves*, *Cinnamon*, and from the *Cedar* to the *Shrub*, ſuch as grew only in the remoteſt regions, furniſhed (as he doubtleſs was) with ſo extraordinary an inſight into all natural things, and powers, for the compoſing of Earths, and aſſigning them their proper mixtures and ferments. I do not here enquire, whether there be not a *Panſperme* univerſally diffuſed, individuated, and ſpecified in their ſeveral *Matrixes*, and receptacles *pro ratione mixti* (as they ſpeak) but I think there might

might very unexpected *Phænomena* be brought to light, in vegetable productions, did men seriously apply themselves to make such possible tryals, as is in the power of Art to effect; and how far *Soils* may be dissembled, and the *Air* and *Water* attempered, (at least for some curiosities, which may give light to more useful things) I do not conclude; but I should expect very rare and considerable things from an attentive and diligent Endeavour. To this end, the raising of artificial *Dews* and *Mists* impregnated with several qualities, for the more natural refreshment of Exotic Plants, were, it may be, no hard matter to effect, no more than were the modification of the Air abroad, as well as in our more confined Reserves, where we set them in for *Hyemation*, and during the most rigorous Colds. As for mixtures of *Earths*;

Plants

Plants we know are nouriſhed by things of like affinity with the conſtitution of the Soil which produces them; and therefore 'tis of ſingular importance, to be well read in the Alphabet of *Earths* and *Compoſts*: For, as we have ſaid, Plants affect the *Marſh*, *Bog*, *Mountain*, *Vally*, *Sand*, *Gravel*, *fat* and *lean* Mould, according to their tempers; and for want of skill in this, the ſame Plant not only languiſhes and ſtarves, but ſome we find to grow ſo luxuriate, as to change their very ſhapes, colours, leaves, roots, and other parts, and to grow almoſt out of knowledge of the skilfulleſt *Botaniſts*; not here to ſpeak of what alterations do accrue from tranſplanting and irrigations alone. I mention this, to incite the curious to eſſay artificial Compoſitions in defect of the natural Soil; to make new confections of Earths and Moulds

for

for the entertaining of the moſt generous and profitable Plants, as well as curious; eſpecially if, as I hinted, we could skill to modifie alſo the *Air* about them, and make the remedy as well *regional* as *topical*; and why not for other Fruits (Strangers yet amongſt us) as for *Oranges*, *Lemons*, *Pomegranats*, *Figs*, and other precious Trees, which of late are become almoſt indenizon'd amongſt us, and grow every generation more reconcileable to the Climate?

Here we might enlarge upon the ſeveral enquiries formerly ſuggeſted: As, how far *Principles* might be multiplyed, and differenced by alteration and condenſation? Whether Earth, ſtript of all *heterogeneity*, and uniform particles, retain only weight, and an inſipid ſiccity? And whether it produce or afford any thing more than embracement to the

firſt rudiments of Plants, protection to the roots, and ſtability to the ſtem; unprolific, as they ſay, 'till married to ſomething of a more maſculine virtue which irradiates her; but otherways, nouriſhing only from what it attracts, without any active or material contribution: Theſe indeed, with many other *queries*, do appoſitely come in here; but it would perhaps render this Diſcourſe more prolix, than uſeful, to enter upon them in *detaille*; nor is it for me to undertake ſpeculations of ſo abſtruſe a nature, without unpardonable oſtentation; and therefore having only offered ſomething towards the diſcovery of the great varieties, and choice of Earths, (ſuch as we Gardiners and Ruſtics for the moſt part meet with in our Grounds,) my next endeavour ſhall be to ſhew, how we may improve the beſt, and preſcribe remedy

remedy to the worſt, by labour and ſtirring only, which being the leaſt artificial, approaches the neareſt to Nature.

At the firſt breaking up of your Ground therefore, let there be a pretty deep Trench or Furrow made throughout, of competent depth (as the manner is of experienced Gardiners,) the Turf being firſt pared off, and laid by it ſelf, with the firſt Mould lying under it, and that of the next in ſucceſſion, that ſo they may both participate of the Air, Showers, and Influences, to which they are expoſed; and this is to be done in ſeverals, as deep as you think fit, that is, ſo far, as you find the Earth well natur'd; or you may fling it up in ſeveral ſmall mounds or lumps, ſuffering the Froſts and Snows of a Winter or two (according as the nature of it ſeems to require) paſs upon them, beginning your

work about the commencement of *Autumn*, before the Mould becomes too ponderous and ſluggiſh; though ſome there are, who chuſe an earlier ſeaſon, and to open their Ground when the *Sun* approaches, not when he retires: But certainly, to have the whole Winter before us, does beſt temper and prepare it for thoſe impregnating agents.

In ſeparating the ſurface-mould from the deeper, whether you make a Trench, or dig holes to plant your Trees in, be it for *Standards*, *Eſpalieres*, or *Shrubs*; the longer you expoſe it, and leave the receptacles open (were it for two whole Winters) it ſoon would recompenſe your expectation; and eſpecially, if when you come to Plant, you diſpoſe of the beſt and fatteſt Earth at the bottom; which if it be of ſweet and ventilated *Mud* of *Ponds*, or *High-way-Duſt*, were prefer-

preferrable to all the artificial *Compoſts* you can deviſe: In defect of this, (where it cannot be had in quantity) caſt in the upper *Turfs* (if not already conſumed) the *Sod* downwards, with the next adhering Mould for half a foot in thickneſs; on this a layer of well-matur'd *Dung*; then as much of the Earth which was laſt flung out, mixing them very well together: Repeat this proceſs for *kinds*, *mixture*, and *thickneſs*, till your *trenches* and *holes* be filled four or five Inches above the level or *area* of the Ground, to which it will quickly ſubſide upon the firſt refreſhings, and a very gentle treading to eſtabliſh the Tree. *Fruit* planted in ſuch Mould you will find to proſper infinitely better, than where young Trees are clapt in at adventure in new-broken-up Earth, which is always cold and ſluggiſh, and ill com-

plexion'd; nor will they require (as elſe they do) to be ſupplyed every foot with freſh Soil, before they be able to put forth luſty and ſpreading roots; but which it is impoſſible to convey to them, ſo as to affect the under-parts, by excavating the ground, and undermining the Trees (after once they arrive to any ſtature) without much trouble and inconvenience, and the manifeſt retarding of their progreſs.

If you will plant in *pits* and *holes*, and not give your ground an univerſal *Trenching* (which I prefer,) make them the larger (*five foot* at the leaſt ſquare) but not above half a *yard* or two *foot* deep, according to the nature of the Tree. In dreſſing the *Roots*, be as ſparing as poſſible of the *Fibers*, ſmall and tender ſtrings (which are as the *Emulgent Veins* which inſume and convey the nouriſhment to the whole

whole Tree;) and such of the stronger and more confirmed parts which you trim, cut sloping, so as the wound may best apply to the Earth. The *Head* or Top I advise you to let alone, 'till after the most penetrating colds be past, and then, about *February*, to take them off, and shape them as you please, and as the skilful *Gardners* can direct you. An *Orchard* thus planted, *Spring* and *Autumnal* stirrings of the Mould about them is of incredible advantage; and even during the hottest Summer-Months carefully to abate the *Weeds* (but not to dig above a quarter of a *Spit*-deep, for fear of exposing them to the *Sun*, unless it be after plentiful showers) is very necessary.

There are, I confess, who fansie that this long exposure of Earth before it be employed for a Crop, causes it to exhale, and spend the

virtue which it ſhould retain; but, provided nothing be ſuffered to grow on it whilſt it lyes thus rough and *fallow*, there's no danger of that; there being in truth no compoſt or lætation whatſoever comparable to this continual motion, repaſtination, and turning of the Mould with the Spade; the pared-off Turf (which is the very fat and efflorescence of the Earth) and even Weeds with their vegetable *Salts*, ſo collected into heaps, and expoſed, being reduced and falling into natural, ſweet, and excellent Mould. I ſay, this is a marvellous advantage, and does in greater meaſure fertilize the ground alone, without any other additament: For the Earth, which was formerly dull and unactive, or perhaps producing but one kind of Plant, will by this culture diſpoſe it ſelf to bring forth variety, as it lies in depths, be it never ſo profound,

found, cold and crude, the nature of the Plant always following the genius of the Soil; but indeed requiring time, according to the depth from whence you fetch it, to purge and prepare it self, and render it fit for conception, evaporating the malignant *halitus's* and impurities of the impriſoned air, laxing the parts, and giving eaſie deliverance to its off-ſpring.

I do not diſpute, whether all Plants have their *primigenial* Seeds, and that nothing emerges ſpontaneouſly, and at adventure; but, that theſe would riſe freely, in all places, if impediments were removed (of which ſomething has already been ſpoken;) & to ſhew, how pregnant moſt Earths would become, were theſe indiſpoſitions cured, and that thoſe ſeminal rudiments, wherever latent, were free to move and exert their virtue, by taking off theſe Chains

and

and Weights which fetter and depress them.

It is verily almost a miracle to see, how the same Land, without any other Manure or Culture, will bring forth, and even luxuriate; and that the bare raking and combing only of a bed of Earth, now one way, then another, as to the *regions* of Heaven and *polar* Aspects, may diversifie the annual production, which is a secret worthy to be considered: I am only to caution our labourer as to the present work, that he do not stir the ground in over-wet and slabby weather; that the *Sulcus* or Trench be made to run from *North* to *South*, and that, if there be occasion for opening of a fresh piece of Earth, for present use, he dig not above one Spit-deep, which will be sufficient to cover the roots of any plantable Fruit, or other Tree; otherwise, not to disturb

disturb it again 'till the *March* following; when, if he please, and that the ground seem to require an hastier maturation, there may be a Crop of *Beans*, *Peaſe*, or *Turneps* ſown upon it, which will mellow it exceedingly, and deſtroy the noxious Weeds; after which, with a ſlight repaſtination, one may plant or ſow any thing in it freely; eſpecially *Roots*, which will thrive bravely; and ſo will *Trees*, provided you plant them not too deep, but endeavour to make them ſpread, and take in the ſucculent virtue of the upper Mould; and therefore too deep trenching is not always profitable, unleſs it be for *Eſculent Roots*, ſuch as *Carrots*, *Parſneps*, *Beets*, and the like; ſince *Trees*, eſpecially *Fruit*, would be tempted even by baits, to run ſhallow; ſuch as penetrate deep, commonly ſpending more in Wood and Leaves, than

in

in the burden for which we plant them.

There is only this caution due, that you never plant your *Roots* where the ſtiff and churliſh ground is likely to be within reach of them; for though it be neither neceſſary nor convenient, they ſhould penetrate deep, it is yet of high importance, they ſhould dilate and ſpread, which they will never do in obſtinate and inhoſpitable land (but revert back towards the milder and better natured Mould,) which crumples the roots, and perverts their poſture to their exceeding dammage. And to this infirmity our rare *Exotic Plants* and *Shrubs* are moſt obnoxious, confined as they are to their *Wooden Caſes*, and *Teſtaceous* Priſons, and therefore require to be frequently trimm'd and ſupplyed with freſh and ſucculent Mould to entertain the *Fibers*, which elſe you will find

to *mat* in unexplicable intanglements, and adhere to the ſides of the Veſſel, where they dry or corrupt.

Having ſaid thus much of the Natural, I ſhould now come to Artificial helps, by application of Dungs, and Compoſts; and indeed, *ſtude ut magnum ſterquilinium habeas*, was old and good advice; but for that there be, who affirm any Culture of the Earth preferrable to Dung, even things ſo ſlight as the haume of *Peas* and *Lupines*, or any other *Pulſe* (for when I ſpeak of Dungs, I mean thoſe excrementitious and ſordid materials which we commonly heap up and lay upon our Grounds,) I beg your patience to ſuſpend a while my ſtirring that leſs pleaſant mixture, and, 'till it be well air'd and fit for uſe, proceed a little farther on our former ſubject, and try what aid we may yet expect from more

kind

kind and benign means, before we come to the groſs and violent. For, beſides that ſuch compoſt (at leaſt ſo prepared as it ought to be) is not every where, nor always to be had in quantities; to confide in Dungs and Ordure is not ſo ſafe and of that importance to our Husbandman, as ſome are made believe, ſince if we ſhall look back into the beſt experience of elder days, we ſhall find, they had very little or no uſe at all of *ſtercoration*. I know ſome there be, who attribute this neglect to the natural fertility of the Country, that 'tis the buſie nurſe of Vermine, and nauſeous accidents; but waving theſe, (without intending to deſert the aid of Soil in place and time.) I proceed with what I call more natural helps; namely, as we have ſhewed, by opening, ſtirring, and ventilating the Earth, and ſometimes its contrary,

Heſiod.

trary, by coverture, ſhade, reſt, and forbearance for a ſeaſon, as we daily ſee it practiſed in our worn-out and exhauſted lay-fields, which enjoy their Sabbaths. 'Tis certain, that for our Gardens of Pleaſure, the faireſt beauties of the *Parterre*, require rather a fine, quick, friable, and well-wrought Mould, than a rank or richly dunged.

I ſhall here then begin with an experiment I have been taught by a learned Perſon of this illuſtrious Body, from whom I have long ſince received the choiceſt documents upon this and many curious ſubjects. And firſt, That amongſt the mechanical aids, (wherein ſtercoration has no hand) that of pulverizing the Earth by contuſion, and breaking it with Plow or Spade, is of admirable effect to diſpoſe it for the reception of all the natural impregnations we have been diſcourſing upon, as conſtant

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conſtant and undenyable, I think will be evinced. For the Earth, eſpecially if freſh, has a certain *magnetiſm* in it, by which it attracts the Salt, power, or virtue (call it either,) which gives it life, and is the Logic of all the labour and ſtir we keep about it, to ſuſtain us; all dungings and other ſordid temperings, being but the vicars ſuccedaneous to this improvement, which of all other makes its return of Fruit, or whatſoever elſe it bears, without imparting any of thoſe ill and pernicious qualities, which we ſenſibly diſcover from forced grounds; and that not only in the Plants which they produce, but in the very Animals which they feed and nouriſh.

I know, *Laurembergius* (ſomewhere) denys this, and that Animals in preparing *Chyle*, tranſmute, alter, and inſume what is only their proper aliment; rejecting

jecting all that is superfluous; but as our Early *Asparagus*, *Cauly-flowers*, and divers roots, manifestly refute it, so does the taste of the flesh, and milk of Cattel, and especially Fowle, that feed on the wild Garlick, Fenny-grass, and other rank and putrid things; not here to insist on their sweet and delicate relish upon their change of Food, and more odoriferous pasture: But to the experiment.

Take of the most barren Earth you can find, drain'd, if you please, of all its *Nitrous Salts*, and masculine parts; reduce it to a fine powder (which may be done even in large proportion, by a rude Engine, letting fall a kindof hammer or beetle at the motion of a wheel;) let this pulveriz'd Earth, and for the time unceſſantly agitated, be expos'd for a Summer and a Winter to the viciſſitudes and changes of the ſeaſons, and in-

fluences of Heaven: By this labour, and rest from Vegetation, you will find it will have obtain'd such a generous and masculine pregnancy, within that period, as to make good your highest expectations: And to this belongs Sr. *Hugh Platts* Contrition, or Philosophical Grinding of Earth; which upon this exposure alone, without manure of Soile, after the like revolution of time, will, as he affirms, be able to receive an exotic Plant from the farthest *Indies*, and cause all Vegetables to prosper in the most exalted degree; and, to speak magnificently with that Industrious Man, to bear their fruit as kindly with us, as they do in their natural Climates: But a little to abate of this, modestly we may say, that this Culture (easy and simple as it is) will be found effectually able to render the Soil of a most extensive Capacity, for the entertainment

tainment of foreign and uncommon plants. For to enumerate some of its perfections; such as refuse Dung, and violent applications, have here pure Earth; and such as require aid, a mellow and rich mould, impregnated with all the blessings which the Influences of the Heaven, and efflorescence of the Earth can contribute to it; fitted, as it is, for Generation, and yet so restrain'd from it, as greedily to receive the first Seeds, which are committed to it, with a passion, and fervency as it were of animal love. What high and sublime things are spoken more upon this, I forbear to prosecute; but in Sir *Kenelme Digby*'s discourse of *Sympathetic Powder* he affirmes, that the Earth in the years of repose recovers its Vigor, by the attraction of the Vital Spirits, which it receives from the air, and those superiour irradiations, which endow

dow simple Earth with qualities promoting fermentation. And indeed, such a vegetative activity I have often observ'd in the bare exposure of some Plants but for a few hours onely, as has rais'd my admiration, particularly in the *Aloe*, and other kinds of *Sedum*, which, when to all appearance shrunk and shrivel'd up, have fill'd themselves in a moment, set out in the Air, when a very few drops of water (at the same, that is, Winter, time) would certainly have made it rot, and turn to a mucilage, as, to my cost, I have experienc'd. And these Ferments of the Earth, by this amity and genial intercourse with the Air, are innumerable, to concoct, digest, accelerate, and restore; equal to, yea, beyond any artificial enforcements of Dungs, and compost whatsoever. But to return to dust again; by the toil we have mention'd,

mention'd, 'tis found, that Soil may be ſo ſtrangely alter'd from its former nature, as to render the harſh and moſt uncivil Clay obſequious to the Huſbandman, and to bring forth Roots, and Plants, which otherwiſe require the lighteſt and holloweſt moulds.

In other caſes and affections, the Earth may be likewiſe fertiliz'd as from without, ſo from within, by more recondite and central Cauſes, and agitations, which if in exceſs, may be allay'd with ſome feminine or other mixture; ſince often times, qualities too intenſe, rather poyſon dry and cholerick grounds, than conduce to their advantage, as we ſhall come to ſhew; and that which makes a cold and moiſt ground fertile, will deſtroy the contrary, as we ſee it in too free applications of ſalt; and therefore it requires no ordinary dexterity, to be able to direct where,

and what remedies are to be administred; since we find it the same in Vegetable productions, as in the Animal, where Complexions should be suited; for want of which care, through avarice, and other fordid Circumstances, Noble Families themselves are many-times rendr'd Childless, which might else have multipli'd and been perpetuated. To illustrate this by our present subject: We find, that a thin seising, or sprinkling of Ashes, has enriched all the higher Pastures, when, where 'twas strew'd too thick, it became totally barren: sometimes again, defect of sufficient depth may be cause of sterility; and so it frequently happens, that the proper remedy of some hungry and shallow surface, is, to superinduce and lay more Earth upon it, and to find out the *medium* by diligent tryals of some degrees of depths in the same Soil; but solitary,

single,

ſingle, or over-haſty Experiments, before the Earth be prepar'd by ſome of our foremention'd Eſſays, may prove diſcouraging, and unſufficient, as my Lord *Bacon* has oft advertis'd us.

Earth is alſo ſometimes improv'd by mixtures of Fearn, rotten leaves, and the pourriture of old Wood; the haulm of beans, peaſe, and other *legumina*, which heates, and accelerates Concoction; for which, and all other Medications, the nature of the Mould is carefully to be examin'd, that application be made accordingly; as for inſtance, If it be ſandy, or other light mixed Earth, to imbody it with ſomething of a fatter nature, as Lime, or Marle, (for I yet forbear the touch of ordure or animal Compoſts, as the leaſt natural;) and be ſure ſo to ſtirr, and lay it (eſpecially if with Lime) that it may not ſink too deep, and ſud-

dainly, as 'tis apt to do, and ſo deſert the ſurface-mould, where it ſhould do the feat, and therefore it is to be the oftner renew'd. But Marle enters as properly here, and ſo does Mudd, Slub of ſlimy Waters; eſpecially, if the ſoil be gravelly and mixt, which it will ſadden and impinguate, and conſequently combine; but if the Gravel be wet and cold, Lime is preferable: Wherefore the nature of the mould ſhould be well examin'd before the application; as here *arenous* and ſandy Earth wants ligature, and beſides conſiſting of ſharp and aſperous angles, wounds and galls, curles and dwarfs our Plants, without extraordinary help, to render the paſſages more ſlippery, and eaſy; and therefore relenting Chalks, or *Chalk Marle*, is alſo profitable, with Calcinations of Turfe, or *Sea-Wrack*, where it is at hand; and if the Soil be exceeding

ceeding bibulous, ſpread a Layer or Couch of *Loame*, diſcreetly mingl'd, at the bottom, to entertain the moiſture. In the mean time, there are yet ſome Plants which thrive almoſt in nothing ſo well as in *Sand* alone, or with very little mixture, nor *that* of any Dung: So *Melons* are ſaid to grow in *Jamaica*; and ſome vaſt Timber-trees have little or no mould adhering to their roots; ſuch is that beautiful ſtranger, the *Japan-Lilly*, call'd by thoſe of *Garnſey* (from whence we onely have them) *La belle de nuit*; and a certain *Palm* of the ſame *Japan*, which ſhrinks and drys at the leaſt touch of Water, as if it were layd before the fire, which is, it ſeems, the onely remedy that reſtores it, or the ſuddain replanting it in *Scales* of *Iron*, or the moſt burning *Sand*: But what if Sand it ſelf, however vulgarly reputed, be not ſo hot, or interiourly

teriourly ardent, as 'tis given out to be? Indeed, for being of an open and looſe contexture, 'tis apt to put forth a forward ſpring, as more eaſily admitting the ſolar rayes; but it does not continue, and is an infirmity which may be remedied with *Loam*, which not onely unites it cloſer for the preſent, but is capable in time to alter and change its very nature alſo, ſo as too hot a Compoſt be no ingredient with it.

Here I take notice, that Huſbandmen obſerve, a too clean and accurate gathering of *Stones* from off thoſe Grounds, which lie almoſt cover'd with them, rather impoveriſhes than improves it, eſpecially where *Corn* is ſown; by expoſing it to Heat and Cold. Certain it is, that where they are not too groſs, and plentiful, a moderate interſperſion of the ſmaller Gravel preſerves the Earth both warm, and looſe, and from too

too ſuddain exhalation; whilſt the over-fine grain, or too nice a ſifting, makes it apt to conſtipate, and grow ſtiff upon wetting; ſo as the tender Seedlings can hardly iſſue through; and this is a document for ignorant Gardiners, who, when they have a fine Flower, think they can never make the ground fine enough about them.

Chalky Grounds come next to be conſider'd, and they ſhould be treated like *Gravel*, *Sand*; and *Stony*, if harſh; but if of the melting kind, 'tis apt to mix with all the ſorts of moulds, and being of it ſelf ſo huſbanded, compoſes a kind of natural Soil fit for moſt uſes, ſought for and of admirable effect in dry Grounds.

Here now of Courſe ſomething we are to ſpeak concerning *Calcinations*, all reducings of Stone into aſhes being of excellent uſe, where *Lime* is upon any occaſion proper;

proper; and indeed all our Compoſts and Dungings ſerve but to this end, namely, ſo to qualifie, and mix the Soil, as may artificially anſwer to the varieties of the natural Earth, or ſuch a Conſtitution of it, as the ſkilful Huſbandman requires: As for Inſtance (ſince all fertility is the reſult of mixture contrary in quality) if it want due heat, to apply additions of a fiery nature; and therefore 'twere profitable, if in the uſing *Lime* with *Turfe*, and *Swarth*, it were laid alternatively, *Turfe* on *Lime*, and *Lime* on *Turfe*, in heaps for ſix months, by which means, it will become ſo mellow (and rich in nitrous Salts) as to diſſolve, and run like Aſhes, and carry a much more cheriſhing Vigour, than if amaſſed in greater quantity; and ſo, by a too violent application, burn out, and exhauſt the vegetative vertue which it ſhould preſerve. There

is

is (by the way) this caution to be us'd in burning of Earth, that tho what is torrified into blackneſs, will exceedingly fructifie; yet, if it proceed to aduſtion beyond that degree, it conſumes the Niter, which is the principle would be preſerved; as we ſhall come to ſhew, when we ſpeak of *Salts*, which we are the moſt carefully to keep intire, in all our animal or other Compoſts: If once the nitrous ſpirit be quite mortifi'd, the Earth produces nothing, till being long expos'd, it have attracted a freſh ſupply to give it life and prepare it for conception: For otherwiſe, all moderate burnings, yea, and even ſometimes (to appearance) immoderate (as that of *Roſe-trees*, *Reeds*, and ſome other, which makes them bear and come the better,) is excellent manure, as we ſee it in Straw and Stubble, enrich'd as they are with *Salts*; and if the very

very Earth be roasted with the fire, it solves obstructions, laxes the Pores, renders them attractive of the Influences, and to cherish with its warmth; and the more simple and unmixt the Ashes be, in relation to what the Ground produces, it is the better: For as Weeds bring Weeds, so the Ashes of Fruits and Berries (being burnt) dispose to bring forth the same; so as no treatment of the seminal rudiments whatsoever, seems totally of power to annihilate their vertue; so strict is the Union of the parts, from whence their *Form* does result. The *Calcination* then of Earth alone, not onely disposes it to produce great variety, but, if it be intense, increases the very weight of the Mould; whether from a certain magnetisme which it thereby contracts (which fortifies it to draw the proper aliment more powerfully) or upon what other account, let the curious examine.

I come next to *Marle*, of excellent uſe to fix light Sand and dry Grounds; ſome are for the White and Grey, others the Blew and Red (which I think the beſt,) according as 'tis more or leſs apt to reſolve after wetting; but neither of them diſcovering their vertue for the firſt year: It does incomparably on Paſtures; ſome on Arable, a good Coat of Compoſt, ſuitable to the land, being firſt ſpread, where you will lay it: If your Marle be very unctuous and rich, apply it leſs copiouſly; the too thick covering is the worſt extream; nor is it alwayes to be us'd without allay and mixture with other proper Soil; for ſome Marle is more Sandy and gritty than other, and ſhould be qualified with a Contrary: Give lean and emaciated Earth, a covering of the fatteſt Marle; hot and dry to the cold and moiſt: And this is alſo to be obſerv'd

observ'd in the applications of all other Composts and Medications.

Marsh, and Churlish Earth will be Civiliz'd, by the rigour and discipline of two Winters; *bis frigora*, is the old method to make the stubborn Clod relent; and with the mixture of a little Sand, if it be too close of Body, it will become excellent Mould.

Clay is of all other a curst Stepdame to almost all Vegetation, as having few or no *Meatus's* for the percolation of the alimental showers, or expansion of the Roots; whether it be the Voracious, Hungry, Weeping or Cold sort: In these cases, *Laxatives* are to be prescrib'd, such as *Sand*, *Saw-dust* with *Marle*, or *Chalk*, and continual vexing it with the Spade or Plow; but above all, with *Sea-Sand*, where it may be procur'd, and the burning of the Ground to ashes, and all

all that it bears, the more the better; for by no leſs ſeverity will this ill-natur'd Mould be ſubdu'd: Rotten wood, and the bottom of bavine-ſtacks, is good ingredient to this manure; and if it be a cold and wet ſort, ſtrewings of ſoot is good; if very ſtiff, rubbiſh of brick, limeſtone, and ſuch traſh may properly be laid at the bottom, and on the upper part compoſts of dung; for otherwiſe no limings (which being fleckt is raw and cold) may at any hand be applyed, eſpecially the hungry ſort, which (as alſo moſt kinds of Marſh-earth) is ſubject to *chaſm*, and gape in dry ſeaſons; to prevent which, a diſcreet mixture of *aſhes* and *ſand* is us'd, for if it be in exceſs, it over-heats the latter.

I do not reckon *Loames* among the *Clays*, though it ſeem to be but a ſucculent kind of *Argilla*, imparting a natural ligament to

the Earth where you mix it, eſpecially the more friable; and is therefore of all other the moſt excellent mean between extreams, faſtening and uniting that which is too looſe, cooling that which is hot, and gently entertaining the moiſture. The Flower-Garden cannot be without a mixture of it, nor well any fruit, eſpecially the beſt Cider Apples, ſo it be accompanied with a lighter ſoil.

To ſumm up all we have ſaid concerning Natural Improvements by mixtures of Earth with Earth, rather than Dungs; let us hear my Lord *Bacon*. He reckons up *Marle*, *Chalk*, *Sea-ſand*, mould upon mould, pond-earth with *Chalk*, and the ſeveral blendings and tempering of them; among all which, *Marle* we find to carry the preeminence with his Lordſhip, as the moſt pinguid, rich, and leaſt over-heating; next to this, *Sand*, as the moſt abounding in

ſalt;

ſalt; *Chalk* more heating, and therefore propet for *Clay*; cold and ſpewing grounds, being ſuffer'd to lye a competent time to reſolve before you turn it in; earth on earth that is (I ſuppoſe he means) the under part upon the upper, or the ſecond ſpit on the firſt, as we have all along directed at the breaking of freſh ground with the ſpade.

Another mixture he commends (and which we have likewiſe newly touched) of ſubſtances, which are not meer Earth, as *Soot*, *Aſhes*, not the hard and dry *Cinders* of *Sea-coal* (which we are too buſie with about this Town, where the ground is naturally too hot and dry) but ſuch as is apt to relent, and even the ſprinkling of Salt, where it is wiſely ſown.

A third is, the permitting Vegetables, abounding in *fixed ſalts*, to dye into the ground, as *Peaſe-*

halm, *Bracks*, all ſorts of *Stubble* caſt on about the beginning of Winter: So *leaves* of Trees mingled with *Chalk*, and proper compoſt of dungs, to heat and preſerve the ground from ſowring with them, when they are us'd alone.

A fourth is (what we have alſo touch'd) heat and comfort, procur'd by *Calcinations*, the burning of *Ling*, *Heath*, *Sedge*; covering the ground with buſhes for a time; encloſures of walls and mounds, when the land lies in the eye of the weather, and in other caſes, *meridian* expoſures, and the warmth of the woolly fleeces of ſheep as well as manure, folded or paſtur'd: And to this we may add the very grazing of Cattle, which in ſome caſes has ſucceeded better than the beſt dungy compoſt, eſpecially for old and decay'd Orchards, which have been obſerv'd to recover

cover to admiration, when mowing has been pernicious; for even the biting of Cattel gives a gentle looſening to the roots of the herbage, and makes it to grow fine and ſweet, and their very breath and treading, as well as ſoil, and the comfort of their warm bodies is wholſom, and marvellouſly cheriſhing: But this is to be underſtood of places where the ſtems are of full growth, and where the beaſt cannot reach to crop.

Laſtly, *Irrigation*, and watering, both by admitting and excluding moiſture at pleaſure: And certainly, this has (ſince his Lordſhips time) been found one of the richeſt improvements that ever was put in practice; eſpecially, where they have the command of fat and impregnate waters, without grittineſs, or being overharſh and cold; whether it percolate through rich ground, or,

which is better, descending from eminences, and moderate declivities, from whence we find the Vallies so luxurious and flourishing.

To this belongs the cure of wet and boggy Lands, by cutting Trenches deeper than the cause of the evil, which proceeds from some conceal'd springs, hinder'd from emerging forth by the sluggish incumbent earth: This makes the ground to heave and swell, but not giving vent, to stagnate and corrupt both the water and the mould about it: And though it lie loose and hollow; yet it gathers no vigour from above, but remains cold and insipid. The remedy is, opening the ground till you meet with a sound bottom, and cutting your Furrow upwards to the Bog, about a foot beneath the spewing water: This is to be done in several places, and when the drains

appear

appear to have wrought the effect, you may fill them up again with ſprag and bavine, great and rough *flint*, *brick-bats*, *tile-ſhards*, *horſe bones*, or any other rubbiſh, which will remain looſe and hollow, and cover them with the graſſy ſide of the turff which you pared off, and laid apart; on *that* throw your other Mould, which being caſt up in heaps for ſome time, will be much improv'd with ſpreading; laſtly, ſow it over with hay-ſeeds.

But the Cure is yet eaſier, if the Land lye conſiderably ſloping; and if it happen to be a planted Ground, then cut your Trench deeper than the roots of your Trees, and apply the foreſaid rubbiſh to intercept the moiſture. About the latter end of *October*, trench the Ground all over, for near a foot and a half in depth, and when you are come within three or four foot of the

stemm, cut off all their larger roots sloping inwards, sparing only the fibers, and such of them as you find tender, and about as big as your finger; leaving also the more perpendicular to keep the Tree steady: This done, cast in some rubbish of *brick-bats*, *limestone* (not *chalk*) and other materials, that the Mould may lye easie about them, and with a mixture of good Earth, plenty of rotten stubble, or other soil, apply it near the Root, and fill your Trench with the rest; and if your Ground require it, (as being too cold it commonly does) add to your compost the Dung of *Sheep*, *Pigeons* or *Poultry* very well consum'd: And because *Moss* is oftner caused by starving and wet Grounds, than by hot and over dry (for both produce it) the Cure is likewise to be effected by *Ablaqueation* and baring the Roots, as above; and for the latter,

latter, by a mixture of *Loame*, with the ſcouring of Pond or ditch-Earth, which of it ſelf is the moſt excellent manure; and the planting your Trees at greater intervals, for admiſſion of *Air* and *Sun*; ſince the ſcraping of it off (which may alſo be done in wet weather) is but temporary, and if nothing elſe be perform'd, it will be ſure to grow again.

Lands which are cold and dry, are (as we have hinted) to be improv'd by contraries; namely by application of compoſts, which are hot and moiſt; as *Sheeps-dung*, burning and calcining of the Earth, with the Vegetables on it, and the like, to excite heat and fermentation; but which is not to be effected without repugnant remedies, and ſuch as are of *heterogeneous* parts, to ſtir and lift up the Mould, and render it leſs unactive. If it be cold and clinging, as frequently 'tis found, there

there *lime*, *rubbiſh*, *ſea-coal-aſhes*, a moderate ſprinkling of *ſand*, with ſome proper compoſt may perform the Cure.

Hungry Grounds require to have the cauſe well look'd into; the water turn'd, (as above directed) or if it want, ſuch as is well enrich'd.

Lands that are hot and burning, allay with *Swines-dung*, as (ſay ſome) the coldeſt; or with *Neats*, which will certainly refreſh it.

For Earth which is too light, there's nothing better than *Pond-mudd*, after a winter has paſs'd upon it.

Earth over-rank (for there may be ſome too fat, as well as too lean,) *ſand* and *aſhes* will take down; but ſtill with regard to what you deſign to plant upon it; neither the *Almond*, nor the *Haſel* will indure a wanton Mould; and though it ſeem a Paradox, that

that any Soil should be too rich, (upon which some *Critics* have suspected the Text in *Theophrastus*, which asserts it twice in two successive Chapters;) 'tis yet a Truth indubitable, and holds as well in Plants as Animals, which growing very fat, are seldom prolific. Some on the contrary are so emaciate, and lean, dry, and insipid, as hardly any pains will make them fruitfull. Such are *Minerals*, and *Metalic* Soils, devouring *clays*, light and *asby-sands*; so again are putrid and fungous; others, though fruitfull, producing only venemous Plants, *Hemlock*, and the deadly *Aconitum*; and some, though wholesom ground, may be poison'd with unskilfull or malicious mixtures, and with damps and *Arsenical* vapours, which sometimes (though natural) are but accidental, and for a season, as when after extraordinary drougths,

Lib. 2i Cap. 5, 6.

drouths, and stagnant air, the Earth hath not been seasonably open'd, refresh'd and ventilated.

Moreover, Ground is sometimes barren, and becomes unfruitful by the vicinity of other Plants, sucking and distracting the juice of the Earth from one to another: For thus we see the *Reed* and *Fern* will not be made to dwell together; *Hemlock* and *Rue* are said to be inimicous; the *Almond* and the *Palm*, which are seldom fruitful but in Conjugation; and perhaps there are *Effluvia*, or certain inconspicuous steams of dusty seeds, which not only impregnate places wherenever grew any before, but issue likewise from one to another, as in our *Junipers* and *Cypress* I observe, flowering about *April*; which are Trees of Consort, and thrive not well alone. The *Fig* never keeps her fruit so well, as when planted with the *Caprifig*.

ſic. By what irradiations the *Myrtil* thrives ſo with the *Fig*; the *Vine* affects the *Elme* and *Olive* (which is at Antipathy with the *Oake*, and imparts alſo ſuch a bitterneſs to the Mould, as kills *Lettuce*, and other ſubnaſcent Plants) is hard to ſay; and why ſome affect to live in crowds, others in ſolitude: But that *Firrs*, *Pines*, *Cedars*, *Elmes*, and divers other Trees aſpire, and grow ſo tall in ſociety, may be (as from other cauſes) ſo from their not overglutting themſelves with nouriſhment (for *Compoſt* is not their delight) which inclines them rather to ſhoot upwards, than expand and ſpread.

Laſtly, by *ſhade* Ground is render'd barren, and by the dripping of umbragious trees: To theſe Air and Sun may be ſoon reſtor'd, by removing of the skreens which intercept them; and yet all ſhade is not unpropitious, where the

Soil

Soil and Climate are benign, as well as that which casts the umbrage; and of this we have a notable instance somewhere amongst the *Astomori* even in *Africa*, where the soil and the air are reported to be so genial, that the *Olive* is said to grow under the *Date*-tree, the *Fig* under the *Olive*, under the *Fig*-tree the *Granade*, under that the *Vine*, under the *Vine* a crop of *Corn*, and at the feet of the Corn a certain *pulse*; none of them impeded by the more than reduplicated shades. But there are some, we must confess, amongst us, which are not so propitious; Trees of all sorts (though the perennial Greens least) breath as much after the air as the soil, and do not thrive without it; nor except it be wholesom.

But to return to barren Earths, which are either out of heart, by being spent, or from the nature of

of the ſoil (in both which, the Plants which they produce, though never ſo unproſperous, run haſtily to ſeed, or make an offer,) they are to be reſtored by the Plow, the Spade and the Rake, by ſtirring and repoſe, appoſitions and mixtures of Earth, *Calcinations* and *Compoſts*; and above all, by the eye of the Maſter, and duſt of his feet, as the *Italian* Proverb has it. For after this Proceſs, and innumerable other Tryals (mixtures of things being endleſs) all other ſorts of Earths and imperfect Moulds may be treated and meliorated; namely, if it be too hard and cloſe, to mollifie and relax it; if too looſe, to give it ligature and binding; if too light, ballaſt; if too meagre, to faſten and impinguate it; if too rich and luxurious, emaciate and bring it down; if too moiſt, apply exſiccatives; if too cold, fermenting Compoſts;

if

if exceſſive hot, to cool and refreſh it; for thus (as we ſaid) Earths ſhould be married together like Male and Female, as if they had *Sexes*; for being of ſo many ſeveral complexions, they ſhould be well conſider'd and match'd accordingly; and for this you ſee what choice I have preſented you of *Sand*, *Aſhes*, *Chalk*, *Lime*, *Marle*, mixture of Mould, *Calcinations*, *Air*, *Sun*, *Dew*, *Rain*, *Froſts* and *Snows*, *Trenching*, *Drilling*, *Watering*, *Infuſions*, and finally, of *Animal Stercorations*, and other compoſts, which is the next, and laſt part of this (I fear) over-tedious Diſcourſe: Since indeed it is not ſufficient to find out even the beſt and moſt grateful Mould in nature, ſo as to relie for ever upon the ſame performance, without ſupplys of all ſorts; ſtirring and repoſe, conſtant dreſſing, and (after all we have ſaid) artificial

lætations; likewiſe to encourage and maintain it in vigour.

We proceed then in the next place to what farther advancement we may expect from *Stercoration*, and manuring the ground by *Compoſts*, and to diſcover the qualities, which may be latent in their ſeveral ferments, and how to apply them by a skilfull and philoſophical hand, without which they do alwayes more hurt than good; and therefore firſt we will enumerate their ſeveral kinds, and next inquire, what it is we chiefly ſeek for, and expect from them; and laſtly, how to treat them ſo as may render them fitting for our ſervice.

From *Animals* we have the Soil of *Horſes*, and beaſts of burden, *Neats*, *Sheep*, *Goats*, *Hogs*, *Pigeons*, *Poultry*, and *Fenny-fowle*: We have alſo *Fleſh*, *Fat*, *Blood*, *Hair*, *Feathers*, *Urine*, *ſhavings of Horn*, *Hoofs*, *Leather*, *Skins*,

Fiſh, *Garbage*, *Snail-mud*, &c. From *Vegetables*, (as of neareſt affinity) we have *Vine-cuttings*, *Stalks*, *fall'n Leaves*, *Marc* of the *Wine* and *Cider-preſſes*, *Lees* of *Wine*, *Oyl*, *rotten Fruit*, *Gourds*, *Weeds*, *Fern*, *Haulme*, *Stubble*, *rotten Wood*, *Saw-duſt*; refuſe of the *Tan-pit*, *Sea-woad*, *Linnen Clowts* and *Old Rags*; alſo *Brine*, *Pickle*, *Aſhes*, *Soot*; and of things promiſcuous, *Waſhing of Diſhes*, *Bucks*, *Barrels*, *Soap-ſuds*, *Slime*, and *Scouring* of *Ponds*, and *Highwayes*, *Duſt*, *Sweepings*: In ſumm, whatſoever is apt to rot and conſume in any competent time, and is either ſalt, unctuous or fatty: To which let me add, impregnating *Rains* and *Dews*, *cold* and *dry Winters*, with ſtore of *Snow*, which I reckon equal to the richeſt Manures, impregnated as they are with *Celeſtial Nitre*. But with all theſe Auxiliaries, we are not yet to imagine, that any of

of them are therefore profitable and good, becauſe they retain an heady ſcent; are hot, moiſt, rotten and ſlippery, fat or unctuous, and the like, which are all qualities, that *alone*, and of themſelves, effect little, till they are corrected and prepar'd; but, for that amongſt theſe materials we detect the cauſes of fertility more eminently than in other ſubſtances; partly from their *fixed ſalts*, or ſome virtue contain'd in them, or rather drawn from without, and imparted to the exhauſted and defective Earth; and that by ſuch a proceſs, as by converting them into a *Chyle* (as it were) it facilitates their being inſum'd, aſſimilated, and made apt to paſs into nouriſhment, promoting vegetation. This obtain'd, the next thing is, how skilfully to apply what we have prepar'd; and this indeed is a difficulty worthy the heads as well as hands of the profoundeſt

foundeſt Philoſopher; ſince it requires a more than ſuperficial knowledge and penetration into cauſes.

We know indeed, that the Earth is without any Artificial Auxiliaries, indu'd with a wonderful prolific virtue; but this, for being poſſible to be loſt and decay, (at leaſt for a longer time than our neceſſities can ſupport) and from ſome grounds never to be expected without ſuch helps, it may be worth our while a little to conſider, by what expedients of digeſtion, or other wayes, the deſir'd effect of perpetuating its vigour might beſt be accompliſh'd.

That the ſecret we enquire after, and which does moſt apparently ſeem to evirtuate towards this end, is ſome *Salt*, I ſuppoſe is generally agreed: For *Salt* it is which gives ligature, weight, and conſtitution to things, and is the

the moſt manifeſt ſubſtance in all Artificial Compoſts.

'Tis the *Salts*, which intice Roots to affect the upper and ſaline ſurface of the Earth, upon which the *Nitrous* Rains and Dews deſcend, and the cauſe that ſome Plants, the moſt racy, and charg'd with juice of all other, (for ſuch is the *Vine*) thrive ſo well amongſt Rocks and Pumices, and in whatever beſt maintains this vital pickle.

'Tis *Salt*, which makes all cover'd and long ſhaded Earths to abound in fertility, and renders the dung of *Pigeons*, *Poultry*, and other *Salacious* Corn-fed Birds, ſo eminently effectual, before the ſoil of *Horſes* and other Beaſts, in which it leſs abounds, as having leſs virtue to attract it.

'Tis *Salt*, that gives ſuch vigour to places, ſprinkl'd with *Urine*, *Soot*, *Aſhes*, &c. which have them not diluted; and to

Bones, *Fleſh*, *Horn*, *Hair*, *Feathers*, *Blood*, and the reſt of thoſe animal excrements: And whence thoſe ſeminal Maſſes ſhould proceed after *Calcination* of the Earth, when it comes to be expos'd again, is hard to divine; whence I ſay, they ſhould derive their life and energy, without being deſtroy'd by ſo powerful an agent as Fire, unleſs they lurk in ſome vegetant and indiſſoluble ſalts, (volatile, fixed, or nitrous Earth) from whence they *Phœnix*-like emerge; though I do not ſay without any other ſpecific rudiment: But 'tis ſtrange, what, as I remember Dr. *Moriſon* affirms of the *Eryſimum* or *Irio*, ſo ſeldom ſeen to grow ſpontaneouſly in *England* before the late prodigious Conflagration of this City, when there appear'd more of it amongſt the Ruines, than was known to grow in all *Europe* beſides, it being a curious *Exotic*,

to

to be found moſt about *Naples* in the time of *Fabius Colonna*, and but rarely elſewhere.

'Tis *Salt*, which reſuſcitates the dead and mortifi'd Earth, when languiſhing and ſpent by our indulgence to her verdant Offſpring, her vigour ſeems to be quite exhauſted, as appears by the rains and ſhowers which gently melt into her boſome what we apply to it, and for which cauſe all our Compoſts are ſo ſtudiouſly made of ſubſtances which moſt ingender or attract it.

'Tis *Salt*, which fertilizes, and renders *Ægypt* ſo luxuriouſly fruitful after the inundations of *Nile*; and the *Nitrous* grounds of *Jamaica*, and other places, which cauſe ſo ſtupendious a growth of Plants and Trees.

'Tis the want of *Salt*, which emaſculates the virtue of Seeds too long macerated in hungry water, and renders floated wood

ſuch unprofitable fuel, and to turn into ſuch inſipid aſhes; and whatſoever it be ſome Plants may appear to affect, as to the external differences of appetite, ſome of them ſeeming to draw in more Air, ſome Earth, and others Water in extraordinary meaſure, according to the ſeveral contextures of their parts, or by whatever *Magnetiſms* and attractives, it is ſtill to come at their *Salts*, which doubtleſs create that inclination, compoſe the various ſaps and juices which they preſent us. Nay, what if I ſhould ſay, that all the ſeveral parts of Vegetables were endow'd with their peculiar and diſtinct *Salts*, through different motions, complications and percolations? or, that ſo many *Earths*, ſo many kinds of *Salts* digeſted and tranſported by their different *Vehicles* and ſtrainers; and thoſe alſo, though unlike in quality, yet perfectly

fectly congruous to what they produce and nouriſh? But what this *Vehicle* or *Menſtrue* is, I contend not; 'tis evident, that *Salts* unite beſt with water, Vernal and Autumnal Showers and Dews, as the moſt apt to convey their inſinuations. You know, who have dignified *Salt* with the prerogative of being nam'd *Element-earth*, the *vigour* and *cloſe* of all things, yea, the firſt and laſt of *Elementated* bodies: What ſhall I ſay, *quid Divinum*, the Original of all fecundity; nor can I ſay leſs, ſince there was nor ſacrifice, nor diſcourſe acceptable without it. And verily upon ſerious contemplation of the premiſes, and the little experience I have had of their effects, in this work of vegetation, as far as I am able to penetrate into cauſes by them, I am not diſpleas'd at the magnificent *Epithets* which are given it. In the mean time, I know there be,

be, who are ſo averſe to this Doctrine, as to prefer *Water* before it, nor contend I with them, ſo they allow the near affinity and friendſhip which is between them, as I have deduc'd it at the entry of this Diſcourſe, where I deſcribe my *Autoptical* obſervations of the ſeveral *Earths*; all that I pretend from hence, being only to excite us to make diligent enquiry, what may more likely be the cauſe of Vegetation, and whether *Salt* have not a Dominion almoſt *Monarchical* in this great Work of Nature, being ſo abſolute an ingredient in all our Dungs and Compoſts, which I am next going to ſpeak of. I cannot in the mean time but wonder, how a thing ſo eminently ſacred, and fertile, ſhould come to be the *Symbol* of Malediction, when, as the cuſtom was, they us'd to ſow *Salt* on *Cities* they had curs'd, there being in all Nature

ture nothing ſo pregnant and fruitful, unleſs it were to invite the Plow to go there, and that the fertility of the ſpot for Corn and Grain might divert them from rebuilding and covering it again with houſes. Indeed to apply *Salt* in exceſs, burns the Earth for a time, ſo as nothing will grow upon it; but when once the rains have well diluted it, it ſprings up more wantonly than ever: This I daily find by ſifting common *Salt* upon the gravel-walks of my Garden, and for which cauſe I have left it off; and we find that the Earth it ſelf over-marl'd and too highly manur'd is as unprofitable, as if it were barren for the time, and that there is in all things a juſt proportion to be obſerved.

But neither all this while do I pretend, much leſs determine, that the Principle I ſo much celebrate, is our common artificial

Salt,

Salt, compos'd of Urine, and the like, which of it ſelf is ſo burning and deſtructive, till its acidity be qualified by the air and ſhowers from heaven (which endows it with a natural magnetiſm, to receive their irradiant virtues;) but a certain more unctuous ſpirit, or airy *Nitre*, pregnant with a vital Balm, which is the thing we endeavour to find in theſe materials of Compoſts: But whether it be accidental, or eſſential, corporeal, or more ſpiritual, principal, or organical; or (to ſpeak with the *Chymiſts*, and later *Atomiſts*,) whether communicated by *effluvias*, *ſalts embryonate*, or *indigeſted* and not *ſpecificate*; from *ferments*, *ſpermatic vapours*, *influences Celeſtial*, or from liquor only impregnated and concocted, I leave to thoſe who affect to wrap up eaſie notions in hard and uncertain terms, whilſt the thing would be of uſe to the Philoſophical

ſoſophical *Husband-man*, were their reduction into juſt *Claſſes*, for the better diſcriminating of the ſeveral Compoſts; as what there's of them moſt abounds in *Nitrous* or *Urinous* parts; or what of the nature of our crude, common *Salts*, and *Kali's*, *Mineral*, or other; and thereby be able to pronounce, where, and how we may apply them with ſafety and ſucceſs: For ſome we know are plainly exitial and deadly to plants (ſuch as the *Mineral*,) others properate too faſt; and ſome are ſluggiſh, and ſcarce advance them at all. It would therefore be conſider'd, whether any *Salts* do univerſally nouriſh all Plants alike? or rather partly, ſome *one* Plant, ſome *another*; for upon the clear deciſion of this ſecret depends all that is truly curious in this affair; laying, as I do, for poſition, that the improvement of all the Earths and Soils

Soils I have spoken of, results from some *Salt* or *Spirit* (call it which you please) as from an indispensable *Principle* in this of *Vegetation*, and perhaps the first rudiment of life in all things else: And till we shall arrive to this (by what I have observ'd in the discreet use even of our common *Salt*, brine, the effects of *Urine* and the like,) I firmly believe, that, were *Salt-Peter* (I mean fictitious *Nitre*) to be obtain'd in Plenty, we should need but little other Composts to meliorate our Ground; since, whether that which so fertilizes it, by any mixture we can yet devise, effect it from any other cause, is greatly to be doubted; nor do I think, but the charge of extracting it, (at lest sufficient to impregnate Water in convenient quantity) might be compass'd by the industrious Farmer without much inconvenience, or the least difficulty,

ty, were he competently instructed in the process of *Calcination*, *Resolution*, *Percolation*, *Evaporation* and *Separation*, put into honest *English*, and easily to be learn'd: Soon we should then see, that this were not to be extracted altogether out of stinking dung, and found in heady trash (which yet is material) but rather in the well-impregnated and natural Mould it self, charg'd with a more generous spirit, or medicinal *Nitre* (in congress with a certain *sulphur*) capable to warm, and excite to vegetation, beyond all we can promise from any meer artificial ferments, much less our common mixtures, and wayes of *stercoration*, which in time grow cold and languish, and are so quickly check't.

And now after all this, I dare not say, that there is nothing more than this meer *Salt*, or spirituous *Nitre*, which concurrs to those

those desir'd effects, that promote fertility, and set the ferment on working: What *ignite particles* beside, and special Composts there may be of consanguinity and near alliance to the respective vegetables (which we know to be of vast difference one from another,) we pretend not to determine; for some Plants are very brisk and quick, others insulse and flat; some are acid, others more dulcorous and sweet; they are salt, sowre, luscious, austere, hot, bitter, moist, dry, astringent, and of strangely different qualities, not to speak of their effects, which it were hard to number. Therefore, that the same Compost, or remedy should be promiscuously universal, is the more unlikely, and would be well consider'd: But admitting this to be salvable, and that we find by experience, a well digested Compost beneficial to almost all the vegetable

vegetable Family; may it not in all probability ſpring from its participation of all thoſe varieties of ferments, (in ſome at leaſt, though in different proportion) which we have been ſpeaking of? as by which each ſingle *ſpecies* draws and aſſimilates that only to it ſelf, which it finds moſt amicous and congruous to its nature; and if ſo it be, then have we no more to do, than to learn how to prepare our *Ferments*, and apply them accordingly; namely, acid to acids, ſweet to ſweets, benign to benign, and ſo the contrary, as we would promote its natural quality; and this perhaps, either by reducing ſome parts of them into Compoſts, as their leaves, ſtalks, fruit; or by ſome more refin'd extraction of their Salts, convey'd in proper vehicles. And for the better adminiſtring of this, the nicer textures of vegetables ſhould diligently be conſider'd;

their several vessels, and *Organic* parts, since every impregnate liquor is not presently fit for all alike; the figuration of their *Labiola*, and curious pores (which 'tis likely draw several juices and spirits) being very different; as the most sagacious Doctor *Grew*, and learn'd *Malpigius* (both Ornaments of this Illustrious *Society*) have begun, (I think I may say) well nigh perfected the way to us, in those elaborate *Anatomizations*, which the world will shortly admire. I insist the rather on this, because we find some Plants to reject divers rich compounded liquors, especially such as pretend to work Miracles in the *Protean* changes of colours, and other qualities, from *mineral* or other substances; and that the very Rains and Dews differ in several *Climes*: So as even from this reason alone, to instance in no more, all Plants do not easily become

become denizons in all places:

——*Nec omnis fert omnia tellus.*

I might add to this the niceneſs of their palates, and fondneſs to their own homes, and to live ſome in conſort, ſome in ſolitude, ſome on dry banks, ſome in watry puddles, and ſome as it were in the very air, and fiery ſoils; nay, ſome which are found to deſtroy the vegetable virtue where they grow; for ſuch are ſaid to be *Oäde*, *Hemp*, &c. and if it be true and conſtant, that all our imbibitions of Salts and Compoſts ſignifie little to Earth pre-impregnated with a ſalt or virtue, different from what the Plant does naturally delight in, ſome obſcure footſteps of which every Plowman ſeems to diſcover, which makes him change the Crop in ſome places yearly: For the firſt, ſecond, or third burden of the

ſame grain, eſpecially *Wheat*, will exhauſt that which is its proper aliment, and then leave the reſt to more ignoble grain, which will be found to thrive well enough, till at laſt ſeveral ſucceſſions of different Seeds quite wear it out, and then it muſt repoſe, or be manur'd with Compoſts for freſh life and vigour. And to this we may add, how ſome Plants again require little change, or help of Art; ſuch as moſt of the *Perennial Greens*, and amongſt theſe, the moſt *reſinous* and oylie, as the *Pine*, *Firr*, *Cedar*, &c. which thrive on barren Hills, and grow in Rocky Crannies, without any Earth almoſt to cover and protect their Roots. Of this ſort I have a *Cedar*-Table, which was ſaw'd out of a Spur only of a monſtrous Tree growing in the *Barbadoes*, which held ſix foot long, five foot broad, and three inches thick, form'd and wrought

as

as it ſtands upon the frame; and his *Royal Highneſs*; had another of a much larger dimenſion, namely eighteen foot in length, and nine in breadth, cut out of the Stem, which was of prodigious growth, to be fed and nouriſh'd as it was between the barren Rocks. But to proceed; we find that moſt *eſculent* and *culinary* Roots do rather chuſe a rich, natural and light Mould, inclining to ſand, than what is forc'd, or over-muck't; and how much they yield to ſoil, growing hard, ſhort and fibrous, and contract the ſmell and reliſh of the ferments, apply'd to accelerate their growth (for according to the *Italian* Proverb, *Ogni pianta ſerba della ſua radice*, Every Plant has a ſmack of the Root) I have already mention'd; ſo as to confide in Dungs, as our vulgar Gardners about this City do, is no incouragement; and there-

fore ſome, not without good reaſon, prefer the Corn and Grain which is reap'd from *Marle*, *Chalk*, *Lime*, and other more natural Manure, before what is produc'd from a Crop which grows on a Dung-hill in compariſon; experience alſo ſhewing, that the cauſe of ſmuttineſs many times proceeds from the impurity, and rankneſs of the dreſſing; and therefore we omit to enumerate amongſt our Soils, *Stercus humanum*, which howſoever preferr'd by ſome before all other, and mention'd by *Columella* with that of Fowl and Cattel, does, unleſs exceedingly ventilated and air'd, perniciouſly contaminate the odor of *Flowers*, and is ſo evident in the Vine, as nothing can reconcile it.

To give ſome inſtances of the nature of particular and ſimple *Compoſts*, (for ſo I take leave to uſe a *Soleciſm*, till they are blended together with the reſt, as we ſhall

ſhall afterwards ſhew) what ever they be, they are by no means fit for the Earth, and uſe of the Husband-man, unleſs, beſides their richneſs, they be perfectly well digeſted, made ſhort, ſweet, and almoſt reduc'd to a crumbling Mould; ſo order'd, as not only not to loſe any of their virtue, but improve it, and to excite, entertain, and communicate heat, and vegetative Spirits to what you ſhall apply them: And that this is not done *per ſe*, that is, by immediate application, without prejudice (unleſs it be for the *Hot-Bed*, which yet has an *Intermedium* of Mould) experience tells us, eſpecially in the ſoil of *Animals*, which is of all other the moſt active, as conſiſting of *Heterogeneous* parts, and repugnancies, without which no fermentation could be obtain'd. Now ſince many of theſe being freſhly made, are not only ſenſibly hot,

but mordacious and burning, they are with caution to be us'd. That every kind of Earth (as well as the Dung of Beasts, *&c.*) has its peculiar *ferment*, and operates accordingly, either by attracting something to it, or embasing what approaches it, sufficient has been said; together with directions how to mingle and attemper it, as best may qualifie it for Culture. That we may do the like with the several sorts of *Soil*, let us consider what their natures are, what their correctives, and how to apply them.

Horse-dung, the least pinguid and fat of any, taken as it falls, being the most fiery, excites to sudden fermentation above any; wherefore, as we said, 'tis then fit only for the *Hot-Bed*, and when that fervour's past, may be spread on fields, where we would have a rank Grass to spring; but is at no hand to be admitted into the Garden,

Garden, or where you desire good *Roots* should grow, unless the ground be very cold or wet, and then too it had need be well rotted, lest, instead of curing it, it leave *couch*, and pernicious weeds, worse than the Disease; the seeds of Hay, and other Plants, of which the *Horses* eat, coming oftentimes intire from them: And such vegetables do commonly spring up from the Soil of Cattel, of which they chiefly eat; as long *knot-grass* from this Beast; short, clean and sweet pasture from *Sheep* and *Cows*; the *Sonchus*, or Sow-thistle from the *Swine*: So as ground muck'd with *Horse-dung* is alwayes the most infected of any, and if it be not perfectly consum'd, it makes your Roots grow forked, fills them with worms, and imparts to them an unpleasing relish; but being laid on at the beginning of winter, and turn'd-in at spring, it succeeds sometimes with *Pulse*.

The

The Soil of *Asses* is highly esteemed, for its being better digested by the long mastication and chewing of that dull Animal; but since we have no quantity of it in this Country, it does the less concern us.

Neats Dung, of all other is universally the most harmless, and the most useful; excellent to mingle with *sandy* and hot grounds, lean or dry, and being apply'd before winter, renders it the most like natural Earth, and is therefore for the Garden and Orchard preferr'd to any other. To use it therefore with the most certain success in such thirsty Grounds, apply a plentiful surface of it, so blended, as the rain and showers may wash in the virtue of it throughly; but this is best done by making the Dung the finer, and then working it in at a soaking wet (not stormy) season, and then leaving it also cover'd with it

it for ſome time, if the rain deſcend in too great exceſs.

The next is *Sheeps Dung*, which is of a middle temper between that and *Pigeons*; profitable in cold Grounds, and to impregnate liquors, of choiſe uſe in the Garden.

The Dung of *Swine* is eſteem'd the coldeſt and leaſt acrimonious (though ſome there be who contradict it) and therefore to be apply'd to burning Lands; but alwayes ſo early interr'd, as never to appear above ground, where it is apt to produce weeds in abundance, from the greedy devouring of what it eats. This, though not ſo proper for the Garden, is ſaid yet to *edulcorate* and ſweeten fruit ſo ſenſibly, as to convert the bittereſt *Almond* into ſweet, and therefore recommended, above all others, for experiments of *change* and *alteration*: Some qualifie it with bran,

or

or chaff well consum'd, greatly comfortable to Fruit-Trees, but especially the hairs and bristles, buried about the Roots of Pear-Trees.

Pigeons Dung, and that of *Poultry* (especially of *Aquatic* Fowls which is too fiery) full of volatile salts, is hot and burning, and therefore most applicable to the coldest ground. There is nothing so effectual to revive the weak and languishing Roots of Fruit-trees, laid early to them; but first be sure they pass their mordicant and piercing spirits, and be discreetly mixt.

Very efficacious is this Dung, to keep frost out of the Earth, and therefore of great use to cover the Mould in *Cases* of *Exotic* and tender Plants; but if the heat be not well qualified, the very steam will kill them in a moment; therefore let a full winter pass over this *lætation* for most uses.

The

The best way of preparing it, is to reduce it into powder, and mingle it with the Mould, and to water with its infusion, which alone does wonders; or, if it have been well expos'd and abated, you may use it at the spring without addition: But if you desire something that is exquisite, macerate it well rotted in the *Lees* of *Wine*, stale *Urine*, and a little *Brimstone* beaten very fine, to mingle with your Earth, for one of the richest Composts. Then is this only to be noted, that, as the effect of this Dung is suddain, so it lasts not long, and therefore must be the oftner renewed.

The flesh of *Carrion*, and dead Animals, being (as, I think, my Lord *Bacon* tell us) prepar'd already by so many curious Elaborations of its juices, is highly effectual; but it should be very well consum'd, and ventilated, till it have quite lost its intolerable

rable ſmell, and therefore never apply'd too crude.

Blood is excellent almoſt with any Soil where Fruit is planted, eſpecially the Mural, to improve the blood of the *Grape* of great advantage, being ſomewhat diluted, and pour'd about the Roots.

Urine, for being highly ſpiritous and ſharp, had need be well corrected, and then, being mingl'd with other Compoſts to allay its acrimonious ſalt, it hardly has its equal.

Hair, *Horn-ſhavings*, *Bones*, *Skins*, *Leather*, &c. are deeply to be buried, and ſo as not to touch but lie about the Roots: Theſe, with *Rags*, courſe *Wooll* and *Pitch-Marks*, improve the Earth, as being full of volatile ſalts: And *Fiſh* is likewiſe ſpread to great advantage of Grounds, where 'tis to be had in plenty; and for being quickly conſum'd, may

may sooneſt be apply'd. We come to Vegetables.

The *Marc* and preſſings of the *Grape* are good Compoſt, and ſo is the *Lees* of Wine, mingled with the Mould: It is of ſingular comfort to the Roots of *Orange-trees*, and *Caſe-Plants*; and if you ſift a little brick-duſt with it, and bury it near the Roots of *Roſe-Mary*, it will thrive wonderfully. It may be a laudable Compoſt for moiſt grounds, where that Plant ſo unwillingly grows.

The *Leaves* of Trees are profitable for their own Fruit, and natural, being well rotted, and not muſty: The *Peach*-leaf, hurtfull to Cattel, is excellent for the Tree from which it falls; and the *Walnut*-leaf, noxious to the graſs, is helpfull to the Tree.

Saw-duſt, *Rotten wood*, found in the hollow of decay'd Trees, under the ſtacks, and where Trees grow thick together, as in great

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and old Woods, but eſpecially, that which is taken out of an inveterate *Willow-Tree*, is preferable to any other for the raiſing of *Seedlings* of choice Plants, mix'd as it ſhould be with a little *Loam*, *Lime-rubbiſh* and *Mould*, as we have taught. This, and the reſt ſhould be well ventilated, and is of great effect to looſen and mellow ground.

Wood-aſhes, rich and impregnate with ſalts, are fit for wet Ground without mixture, and in paſture, excellent, not ſifted on over thick: It likewiſe kills the Worm; but in Earth which is ſubject to over-heat and chap much, *Aſhes* and burning Compoſts do but increaſe the feavor, and therefore contrary remedies are to be ſought; ſuch as *Neats* and *Sminet Dung*, but not ſo when Lands are naturally or accidentally cold: Wherefore we ſhould endeavour by all means

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to detect, as far as we are able, the quality predominant both of the Earth we would improve, and the Composts we apply, and not throw them on promiscuously upon every thing without considering of what temper and constitution they be; for Grounds are as nice as our Bodies, and as obnoxious to infirmities upon every defect and excess; and therefore it requires skill, and no little study to be able rightly to marshal this *Materia Medica* (as I may call it) of Composts, the virtue of which does sometimes lie very hidden; at least, if that be true which Sir *Hugh Plat* affirms, that what we all this while seek after, is indeed altogether invisible to humane eyes, and to be discern'd only by the eyes intellectual, because 'tis vail'd and clad under so many different bodies, whereof some are more ponderous, such as *Marle*, *Chalk*, the Dung of

Beasts, &c. some more light, as their *Flesh*, *Bones*, *Hair*, &c. and some yet lighter, as *Grain*, and generous Seeds; for in such as have Virtue to multiply their own *Species*, that Spirit is invested with a very thin and curious integument, as in effect is apparent in the *Blood* and *Flesh* of Animals, so much more powerfull for the inriching of Land than their Dung and Excrements; this industrious man computing it to no less than twenty times, and to the same advance above this, *Hair*, *Wooll*, and *calcin'd Bones*, &c. and as to the courser Soils, that the Dung of *Pigeons* and *Poultry* does as far exceed that of *Beasts* which feed on gross Vegetables; and tells us, it has been found upon experience, that one load of any sort of *Seed* contains as much Virtue as ten load of ordinary Dung; and therefore 'tis advisable, that upon all removals of

of *Corn-ricks*, *Hay-ſtacks*, &c. the Husband-man reſerve all he can of the bottom, offal and ſhakings, and to mingle it with *Chimney-ſoot* and *Blood*, and with that to reduce it into the conſiſtence of a paſte: To this add as much dry'd *Neats Dung*, temper'd with *Urine*, and made up in cakes as big as houſhold loaves, and after all is well dry'd in the ſhade, crumble them to duſt, to be ſifted or ſprinkl'd on the ground for a very conſiderable improvement.

Of like effect is Earth blended with *Malt-duſt*, or putrified and decay'd *Corn* reduc'd to Meal; ſo is the duſt of old *Fur-buſhes*, (in *Devonſhire* call'd *Dreſs*;) but this laſt ſhould not be taken in Seed-time, leſt it infect the Ground with a Plant not eaſily extirpable.

Laſtly, The *Mud* of Ponds and ſtagnant waters of ditches, ſhovl'd

up, and well air'd, is beſt apply'd to Roots of Trees, but eſpecially the duſt of unſtony high-wayes, where the drift of Cattel, and much paſſage is: Let it be carried off from *March* to *November*; for it being already a kind of refined Soil continually ſtirr'd and ventilated, there is no Compoſt preferrable to it for any uſe: It is prepar'd in the higheſt degree, and will need no wintering, but may be us'd immediately; and ſo may *ſtraw*, *haulm*, and other *littiere* trampl'd on in dirty ſtreets, after it is a while rotted and mingled.

Thus with no little induſtry are found out the ſeveral kinds of Compoſts, and materials of improvement, and what is the moſt genuine and true medicament of every Soil for *Arable*, *Paſture* or *Garden*. I do not ſay all, or as if there were no more; for what if indeed there ſhould be as many

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ſorts of *Compoſts*, as there are of *Ferments* or *Salts*; and as many ſorts of *Salts* as there be of *Vegetables*, or any other putrifiable matter? The more there be, the greater ought to be our induſtry and skill to be able to diſtinguiſh them, and to know how and when rightly to apply them.

Nor is it ſufficient to conſider the nature of the Earth, Mould, and ſeveral Compoſts, but of the very Plants themſelves, for the application of what you adminiſter, be it for Food or Medicine; as if they be cold of Conſtitution, to make uſe of the hotter Compoſts; if hot, to preſcribe the cold: For inſtance in a few of the moſt uſeful only:

Fruit-Trees do generally thrive with the ſoil of *Neats* and *Hogs*; moſt *Flowers* with that of *Sheep*, but eſpecially *Roots*. *Peter Hondius* tells us (in his Book intitl'd *Dapes inemptas*) that by the ſole

application of *Sheeps-Dung*, he produc'd a *Reddiſh-Root* in his Garden as big as half a mans middle, which being hung up for ſome time in a Butchers ſhop, people took for an *Hog*.

Apples affect a pretty rich ſoil, with a daſh of *Loam*, but they will bear even in *Clay* well ſoil'd, and mix'd with *Chalk*, eſpecially the more winter fruit; and in *Chalk* alone for ſome years, but they produce, though ſweet, not ſo large Fruit: But both *Apples* and *Pears* have a better reliſh in Grounds that are not over-moiſt, and where they may ſtand warm, and the laſt will proſper well enough where the ſoil is mixt with *gravel*, and has an harder bottom.

Cherries, Summer and Stone-Fruit, ſuch as have their Roots like thrumbs, deſire a fine light Mould, *Sand* or *Gravel*, with *Chalk*, and good Compoſt, unleſs

leſs it be very courſe and ſtony, in which caſe it would be well ſoil'd, and the pit you plant in, fill'd with rich Mould, as far as the Roots likely uſe to extend before they reach the *Gravel*, ſo as to make good ſpread; and this to be renew'd every third or fourth year; and for this reaſon it is profitable ſometimes to bait ſteril Grounds, by laying your Compoſts at reaſonable intervals, thereby to tempt and allure the Roots towards it, and keep them from wandring, which they will be ſubject to do in ſearch of freſh nouriſhment: For to bear conſtantly well, and much, *Fruit-trees* muſt have frequent *lætations*. Nor are we to judge, that what is excellent Ground for one ſort, is ſo for another, ſince that which is perfectly good for Corn, is not ſo for all Fruit-Trees, and ſlender ſtraw will be fed and brought up with a great deal leſs

substance and virtue, than what will serve to furnish the stem, bulk and head of a fertile and spreading Tree.

Vines (than which there is no Plant more sensibly retains the different qualities of Earth, or whose juice is of more variety) rejoyces in light, but vigorous, Mould, rather *Sandish*, and inclining to dry, than either fat, luxurious or moist. *Lime* temper'd with *Blood*, exceedingly recreates it, after the first accidental heats are pass'd over.

The *Fig-tree*, (though affected to dry Grounds) is no lover of *Stercoration*, yet in some Countries they apply *Oyl-Olive* and *Doves-dung*, to cause them to bear early fruit; but omitting the *Oyl*, if the Dung be mingl'd with *Lime* and *Ashes*, it is not to be reprov'd.

Artichokes thrive exceedingly with *Sheeps-dung*, which apply'd to

to the Roots make them produce very great heads.

Melons, *Asparagus*, and most hasty growers, participate evidently of the Soil; and therefore we have already shew'd, how new and heady dung contaminates; and this is (amongst other) the reason why in the more Southern Countries (where they are planted in the natural and unforc'd Mould) they are so racy and superiour in tast and flavour to ours. I should therefore recommend the use of *Sheeps-dung*, well reduc'd, or rather the ashes of burnt *straw*, and the hotter dungs *calcin'd* for some tryals to reform it; or, as they do in *Italy*, mingle Dust and Earth manur'd with *Sheeps-soil* and *wood-ashes*; if after all we have said, the cause of our application of Composts and Dungs to these rarer and choice productions, be not to prevent the rains only; for otherwise

otherwiſe too rich Soils impair the moſt delicious Fruits, rather than improve them; and *Grapes* and other Fruits are ſooner ripened which ſtand near the Highwayes, much beaten by paſſengers, than by all that you can lay to the Roots, or ſpread on the Ground for that purpoſe, the *Duſt* inveſting both the Tree and Fruit with a kind of refin'd ſoil, mellow'd with the dews and gentle ſhowers which fall from Heaven.

To give ſome inſtances; *Roots*, as we have ſhew'd, deſire deep Ground; *Fruit-trees* not ſo, which ſhould never go deeper than the uſual penetrations of the Sun; for no farther is the Mould benign: Beſides that they but too propenſely ſink of themſelves, eſpecially *Bulbs* of *Flowers*, whoſe fibers freeing their bottoms, draw them down, and then they change their artificial and acci-

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dental beauty, and (as we call it) degenerate; but *Trees* will grow and thrive, if planted on the very ſurface, with little covering of Mould, ſo it be oft refreſh'd and eſtabliſh'd againſt the wind. Beſides, we find, that even the goodlieſt *Fruit* (as well as ſome *Timber-Trees*) have many times the hardeſt footings, with reaſonable depth of Earth: So little does it import to have it profound; and therefore in ſoft and deeper *Sands*, they thrive nothing ſo well, as on *Chalk* and *Gravel*, ſo long as the root can be kept from deſcending; in which caſe you ſhould (as we ſhew'd) bait the Ground towards the ſurface, and keep the roots from gadding too far from the ſtem; for the lower roots are frequently ſtarv'd by the upper, which devour the nouriſhment before it arrive at them.

To give ſome other profitable inſtances

instances of this nature; In *Transplanting Trees* (beginning early, and when the Earth is most tractable) endeavour to make your Mould as connatural to that of the place or nursery from whence you remove them, as you can. 'Tis not therefore material, it should be so much richer; but where *Imp-Gardens* are poor, the tender Plant (like a Child starv'd at Nurse) does seldom thrive where ever you set them; and therefore they should have fair and spreading roots, and be well fed, what ever some pretend. For other rarer shrubs and Plants, the *Orange* (*Herrera* tells us) thrives well with the *ashes* of burnt *Gourds* and leaves, and needs not change of Mould, even in the *Case*, above twice a year, and that towards the surface; but *Amomum Plinii* is a strange waster of Earth, and should continually be inrich'd and planted

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as it were all in dung; so the *Myrtil* and *Pomegranat*, whilst the *Red-rose*, *Capers*, *Sampier*, and other Shrubs and Plants thrive better in *Gravel* and rubbish; *Sage* with ashes, and so *Porselan* with dust and sweepings: *Rue* affects the dry Mould, *Lettice* the moister; *Flowers* for the most part detest the Dunghill, but if any, that of *Sheep* or *Neat* mixt with *Loam* and light *Earth*: *Tulips* delight in change, and rather in poor than rich Mould; yea, sharp and hungry to preserve their variegations: But because 'tis sometimes troublesome to transplant them yearly; place a layer of short *stable littier* a foot beneath your Mould, and you will find they may remain unremov'd for some years without prejudice. The *Iris* loves the dry beds; *Crocus*, a mixt, rich and light soil: *Carnations* would have a *Loamy* Earth, qualified, if too stiff, with *Sea-sand*,

Sea-sand, and *Sheeps dung*; if too poor, with richer Mould; so the *Peöny*, *Anemony*, *Ranunculus*, and other Flowers; but then lay it at the bottom, such as you take from the last years *Hot-bed*, giving it a surface of under-turf, which has been foder'd on, sweet and air'd: In this to plant your Roots, but so as not to touch the Soil, but rather let it lie about the Pasture-Earth, in which your *Bulbs* should alwayes be planted: For all dung'd Earths canker the roots of *Flowers*, whilst their fibers, reaching the heartier Mould, draw from it without danger. But if you would indeed be provided of excellent Earth to plant most *Flowers* in, lay turf of Pasture-ground in heaps for two Winters, till it be perfectly consum'd: This is also admirable for *Tuberous* roots, and indeed all up-land-mould, whether *Sandy* or *Loamy*, may be

be made perfectly good with *Neats-dung* laid on the ſurface about *Michaelmas* for one year, that it may waſh kindly in; then in *September* after, pare this turff off as thin as you can, and for the firſt foot depth of Earth, you have bedding for *Bulbs* and *Tuberous* Roots ſuperiour to any other. Another proper mixture (much in eſteem with our Gardners) is hollow *Willow Earth* a fourth part, ſifted from the groſſer ſticks, with almoſt an equal portion of *Sheeps-dung* (*Lawremberg* ſays, *Goats* is better) with a little natural Mould; and indeed this is excellent to raiſe any *ſeedlings* of *Flowers*; but for the more minute and delicate, ſuch as *Cypreſs*, *Mulberie*, the *Samera* of *Elme*, and the like, prepare a Mould almoſt of powder, gently refreſh'd with a dewie *ſperge* or bruſh, not with the watring-pot, which plainly gluts it.

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Auricula, *Anemonies*, &c. should be raised in the *Willow*-mould described above, but planted forth where *Neats-dung* and *Loam* is sifted among the pasture Earth.

The *Pine* and bigger *kernels* make great advance by being coated with dung, which being grown to great Trees abhor it. Touching change of *Crop*, something has been said already, and *Pease* degenerate betimes, at least in two or three years, be the Land never so good; so 'tis observ'd, that most Plants long standing in the same bed, impair both the Ground and themselves, especially *Sorel*.

To Conclude; for a general good *Garden-soil*, take the natural under-turff, if it be not too stiff; add to it a quarter part of *Neat* or *Sheeps-dung* perfectly consum'd; one bushel of *sleek'd lime* to each load of Mould, with some

ſome ſweet, though rotten *Wood-pile* or *Willow-Earth*, mix it well together; and you have a choice compoſition for all your rare *Exotics*, *Oranges* and *Caſe-ſhrubs*; remembring to place the ſprag of rotten bavins, hampers or baskets, to keep the Mould looſe, with *Lime-ſtone*, *Brick-bats*, *Shells* and other rubbiſh at the bottom, that the water may paſs freely, and not rot the fibers: And therefore be careful never to make your *Caſes* cloſe below, but rather ſo *barr'd*, as to be able to keep the courſe materials from dropping through, whilſt auger-holes (though never ſo thick boards) are apt to be ſtop'd up, and then your roots do certainly rot, and your trees grow ſick. The ſame is to be obſerv'd in *Pots*, and that you place them about an inch from ground, that they may freely drain, and as freely receive refreſhing. But I muſt not quit theſe curioſities,

to ſpeak of the cooler Compoſts, till I have deſcrib'd the beſt *Hot-bed* that I know of.

Dig a Pit or *Foſſe*, *hot-bed*-depth, four foot is ſufficient, and of what figure and dimenſion you think will beſt entertain your furniture for it; if it be twenty foot in length, and ten foot broad, I think it competent: Line the ſides with a wall of brick and half thick; fill this pit with freſh ſoil from the ſtable, trodden as other *hot-beds* are, but without any Mould at the ſurface. In *this* place *Woodden-Caſes*, made like Coffins, (but not contracted at the extreams, nor lidded) of what length and breadth you think beſt, but not above a foot in depth; let theſe be Dove-tail'd, with woodden handles at each end, to lift in and out, and laſtly, boar'd full of auger-holes at the bottoms: Your *Caſes* thus fitted, fill them with proper Mould,

Mould, ſuch as you would ſow *Melon-ſeeds* in, or any other rare Seed, and thus place them in your bed of dung. The heat will paſs kindly through the perforations, and continue a cheriſhing warmth five times as long as by the common way of *Hot-bed*, and prevent you the trouble of making new and freſh; for, the whole proceſs of the *Melon*, or what other of choicer Plants, require more than one removal: The heat of this bed continues eight or ten weeks without need of repairing, and if it ſhould, 'tis but caſting in ſome freſh-made ſoil and *littier*, beneath, and about your Caſes, of which ſome you may glaze *Cheveron-wiſe* at the top, and with ſpiracles or caſements, to refreſh, and give them Air and Sun at pleaſure. And theſe *Beds*, where you cannot conveniently ſink them for want of depth, becauſe of water,

you may build above ground as well; and you may, or may not extend a Tent over it, to keep out Rain, Wind and Sun, according as you find occaſion. But thus have you a neat and uſeful hot-bed, as I have been taught to make it by the Right Honourable, the late Lord *Vicount Mordant* at *Parſons-Green*, whoſe induſtry and knowledge in all hortulan Elegancies requires honourable mention.

And now at laſt I am come to ſet down the ſeveral wayes of preparing *Compoſts* of *Dungs*, and thoſe other ingredients we have mention'd, and begin with the rudeſt, as that which beſt accommodates to the groſſer part of Husbandry (which yet requires a ſpecial maturation) and ſo deſcend to the more refin'd: And theſe I diſtinguiſh into the *moiſt*, the *dry*, and the *liquid* for *Irrigation*. But firſt, here by the way

way greatly to be reproved is the heaping of a deal of indigeſted ſoil, and other traſh, expos'd (as commonly we find it) to the heat of the Sun, continual rains, and drying winds, as it lies in the wide field, without the leaſt coverture or ſhade; by which means, all the virtue is drawn forth and carried away, leaving little more than a dry and inſipid congeſtion of *Caput Mortuum*, and perhaps a florid green Circle, or *Fairy-Dance* at the bottom, which the impregnated rains have inrich'd with what it has waſh'd from the heap; wherefore to prevent this, and make one load of our prepared Soil worth ten of it:

Cut a ſquare, or oblong *pit* of thirty or forty foot in length, at the leaſt four foot in depth, and ten foot over, or of what dimenſions you think will ſuffice to furniſh you with ſtore: Let one of the ſides or edges be made ſo ſlo-

ping as to receive a Cart or Wheel-barrow to load and unload eaſily; let the bottom and ſides alſo be ſo well pav'd, or laid with a bed of ſmall *Chalk*, *Clay*, or the like, that it may be capable of retaining water like a Ciſtern: If to this you can commodiouſly direct any channels or gutters from your Stable, and other ſinks about the houſe, it will be much the better. The *Pit* thus prepar'd, and under covert (for that I ſhould have premis'd) ſo as at leaſt the down-right rains may not fall upon it; caſt into it firſt your *Stable ſoil* with the *littier*, a foot or more thick, according to the depth of your *Pit*; upon this lay a bed of *fine Mould*, on that another bed of *Cider-Marc*, *rotten fruit*, and *Garden offall*; on this a couch of *Pigeons* and *Poultry-dung*, with more *littier*; then a ſtratum of *Sheeps-dung*, a layer of *Earth again*, then *Neats-dung*;

dung; laſtly, *Aſhes*, *Soot*, *Fern*, (a moiſt and a dry) bottom of *Wood-ſtack*, *Saw-duſt*, dry ſcowrings of *Ponds* and *Ditches*, with all other ingredients, as you happen to amaſs them, till the *Ciſtern* be full and heaped up; upon all this caſt plentiful water from time to time, which if you can have out of ſome *Pond* where *Cattel* uſe to drink and cool themſelves in, it will be excellent: At the expiration of two years you may confidently open your magazine, and ſeparate the Layers as they riſe, to caſt them into other ſmall *Pits* or receptacles made a little concave to receive them; where you may ſtir, air, mingle and work them in with freſh Mould, or one with the other, as you find cauſe, till they become comparatively ſweet and agreeable to the ſcent: Laſtly, you may paſs them through a *ſcreen* made of lathes plac'd at

moderate intervals, and with the liquor remaining in your great Cistern sprinkle the several Composts, and make them up for use, casting the course remaining stuff, which would not pass the *riddle*, into the Cistern again for farther mortification, and so keep your Pit fill'd with fresh materials from time to time after the same method.

There are some who advise us to suffer your mixture to remain till it be quite dry, after it is thus refin'd, and then being beaten to dust, to strew it upon the ground. And indeed this seems in *Pliny*'s time to have been the Custom; nor do I contradict it, provided you could water it, or were sure of a shower before the Sun had drank too deeply of the spirit and vigour of it, which, reduc'd in this manner, it does easily part withall.

Now the Reason of our thus treating

treating *Compoſt* of various ſoils and ſubſtances, is not only to dulcifie, ſweeten, and free them from the noxious qualities they otherwiſe retain, and conſequently impart, apply'd, as uſually we find them, crude, indigeſted and unactive; but for being immoderately hot and burning, or elſe rank, and apter to ingender vermine, weeds and fungous excreſcences, than to produce wholeſome Plants, Fruits and Roots fit for the Table, and grateful to the Palate; for which effect, it ſhould be throughly concocted, air'd, of a ſcent agreeable, and reduc'd to the next diſpoſition of a ſweet and natural Earth, ſhort and tractable, yet not ſo macerated as to loſe any of its virtue. The proper ſeaſon therefore for this work, is the beginning of the Autumnal *Æquinox*, and wind weſterly, both to prepare and lay it on your Land; that, whether it be

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of wet or dry conſiſtence, it may have a gentle ſoaking into the Earth. As for freſh Dungs, ſuch as *Sheep* make when they are folded, it is good advice to cover it with Mould as ſoon as poſſible, before the Sun have over-dry'd it, for the Reaſons before hinted; and by this early application you will find all that is ſtiff and yet any wayes contumacious, ſubdu'd, and perfectly prepar'd before you turn it in. If you would meliorate Ground for *Fruit-trees*, *Roots* and *Eſculents* of the *Orchards* and *Olitory Garden*, be cautious, that the hotter Dungs approach not immediately to their ſtems or roots, without ſuch a circumpoſition of natural Mould as we have commended. But this is a note for ſuch as think fit to uſe the ſoil ſteaming as it comes from the heap; but if it be prepar'd as we have ſhew'd, there is no danger even

even of immediate contact: And the same is to be observ'd in *Ablaqueation*, where we find cause to *bare* the Roots of Trees, and expose them to the air, for fresh influence, or to abate exuberances; and that the cavity be not fill'd all at once (when we conceive the Roots have been sufficiently air'd) but gradually from month to month, as from *October* till the beginning of *March*; and upon other occasions, leaving the surface rough, rather than too compt, and exquisitely trim'd, if only you dig your Ground; which once in two or three years, four or five, (as you perceive your Trees to require Culture,) is advisable, and then to mingle the Earth with a thorow soiling, and refresh it with the impregnate water of your Cistern, will exceedingly recover a worn-out Plantation. This *Irrigation* may also be yearly

ly given to the Roots of your *Fruit-trees* about *June* and *July*; and the ſpreading of a little good Soil upon the ſurface, and rough chopping it in with the ſpade before winter, is good husbandry, to waſh in amongſt the Roots, and to draw them upwards, the ſhallow running of which is of ſo great importance.

And thus having ſhew'd how to prepare, ripen, ſeparate and apply the ſeveral *Compoſts* (which for diſtinction ſake we call the *dry mixture*;) I am next to deſcribe the *liquid* in many particulars, not much differing from the former Proceſs.

'Twixt Eaſt and North erect a *Pergola* or *Shed*, ſo contriv'd with a cover, as to exclude or admit the rain, ſnows and weather at pleaſure; ſink a Pit for the *Ciſtern* as you did the former under it; caſt into it all the acid Plants, bitter and rank weeds that come

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in your way, and grow in the neglected corners of your grounds, such as *Esula*, *Hemlock*, *Docks*, *Thistles*, *Fumary*, *Tabacco-stalks*, *Wormwood*, *Cabbage-leaves and stalks*, *Aconites*, the leaves, trash, and offal, such as Cattel will not touch; to these add *Pigeons* and *Poultry dung*, with their *Quils* and *Feathers*; any sort of *Ashes*, *Soot*, *Hogs-hair*, *Horn*, *hard bones*, such as the dogs have gnawn; also *Urine*, *Blood*, *Garbage*, *Pickle*, *Brine*, *Sea-water*, (if conveniently to be had,) otherwise Pond-water, to sprinkle it with, and keep it moist to accelerate putrefaction; but when all is well consum'd, forbear the pouring on of insipid liquors, and thus leave it till it be dry; then air, mingle and work your *Compost* as you were directed above, or boile it into *Peter*, casting what you find not well digested into the Cistern again for another year, and with a little

ly given to the Roots of your *Fruit-trees* about *June* and *July*; and the spreading of a little good Soil upon the surface, and rough chopping it in with the spade before winter, is good husbandry, to wash in amongst the Roots, and to draw them upwards, the shallow running of which is of so great importance.

And thus having shew'd how to prepare, ripen, separate and apply the several *Composts* (which for distinction sake we call the *dry mixture*;) I am next to describe the *liquid* in many particulars, not much differing from the former Process.

'Twixt East and North erect a *Pergola* or *Shed*, so contriv'd with a cover, as to exclude or admit the rain, snows and weather at pleasure; sink a Pit for the *Cistern* as you did the former under it; cast into it all the acid Plants, bitter and rank weeds that come

in

in your way, and grow in the neglected corners of your grounds, such as *Esula*, *Hemlock*, *Docks*, *Thistles*, *Fumary*, *Tabacco-stalks*, *Wormwood*, *Cabbage-leaves and stalks*, *Aconites*, the leaves, trash, and offal, such as Cattel will not touch; to these add *Pigeons* and *Poultry dung*, with their *Quils* and *Feathers*; any sort of *Ashes*, *Soot*, *Hogs-hair*, *Horn*, *hard bones*, such as the dogs have gnawn; also *Urine*, *Blood*, *Garbage*, *Pickle*, *Brine*, *Sea-water*, (if conveniently to be had,) otherwise Pond-water, to sprinkle it with, and keep it moist to accelerate putrefaction; but when all is well consum'd, forbear the pouring on of insipid liquors, and thus leave it till it be dry; then air, mingle and work your *Compost* as you were directed above, or boile it into *Peter*, casting what you find not well digested into the Cistern again for another year, and with a little

a little addition, it will give you half the quantity of the former, and, provided that you ſupply the Magazine, a continu'd and farther increaſe. Indeed this *Salt* and *Compoſt* is not immediately fit for uſe, till it be well dulcified and purg'd from its over acrimony, therefore mix it well with your Mould, and dilute it as you ſee cauſe. The *Receipt* is ſet down by old *Glauber* for the effecting of wonderful Vegetation, by the aſſiſtance of certain *Circulatory* Veſſels to prepare the *Oylie ſuccus*, and pinguid Juice, which that Author teaches in his *Miraculum Mundi*, to extract not only out of theſe Materials, but out of *Turf*, *Wood* and *Stone* it ſelf, by *calcining* and burning them in cloſe and *reverberating* furnaces, to which a *Tube*, adapted near the bottom, may convey the ſpirits into a *Recipient*, as he deſcribes the Proceſs. I men-

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tion this the rather, for the real effects which I have been told of this *Menſtrue* from very good Teſtimony: And doubtleſs he who were skill'd to extract it in quantity (and to dulcifie, and qualifie it for uſe,) a true *ſpiritnous Nitre* may do abundantly more, in the way of the improvements we have celebrated, with a ſmall quantity, than with whole loads, nay, hundreds of loads of the beſt and richeſt *dry Compoſts* which he can deviſe to make. But beſides this, any houſes of *Ordure*, or rancid mould, ſtrong ſalts, *vinous* liquors, *Urine*, *Aſhes*, *Duſt*, *ſhovelings* of the *kennel* and ſtreets, *&c.* kept dry, and cover'd for three or four years, will be converted into *Peter*, without half this trouble; eſpecially if you mingle it with the dung of *Pigeons*, *Poultry*, and other ſalacious Fowl which feed on Corn: Or thoſe who would not be at the

the charge of diſtilling for theſe advantages, may make experiment of the ſo famous *Muck-water*, not long ſince cry'd up for the doing wonders in the field: Throw of the ſhorteſt and beſt *Marle* into your Ciſtern, exceedingly comminute and broken, which you may do with an iron Rake, or like Inſtrument, till the *liquor* become very thick; caſt on this the dung of *Fowl*, *Conies*, *Sheep*, *&c.* frequently ſtirring it; to this add the ſoil of *Horſes* and *Cows*, *Grains*, *Lees* of *Wine*, *Ale*, *Beer*, any ſort of beverage, *broths*, *brine*, *fatty* and *greaſy ſtuff* of the *Kitchin*; then caſt in a quantity of *Lime*, or melting *Chalk*, of which there is a ſort very unctuous; alſo *blood*, *urine*, *&c.* mixed with the water, and with this ſprinkle your Ground at ſeaſonable times, and when you have almoſt exhauſted the Ciſtern of the liquid, mingle

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the residue with the grosser Compost of your Stable and Cow-house, and with layers of *Earth*, *Sand*, *Lime*, S. S. S. frequently moistned with uncrude water, the taking up of which you may much facilitate, by sinking a Tub or Vessel near the corner of the Cistern, and piercing it with large holes at the bottom and sides, by which means you may take it out so clean as to make use of it through a great *Syringe* or watring Engine, such as being us'd to extinguish fire, will exalt and let it fall by showers on the Ground, and is much the more natural way of irrigation, and dispatches the work.

This Liquor has the reputation also for insuccation of *Corn*, and other Grain, to which some add a fine sifting of *Lime-dust* on it, and when that is dry, to repeat it with new infusions and siftings: But

There is yet a shorter Process, namely, the watring with *Fishmongers-wash*, impregnated with the sweepings of Ships and Vessels trading for Salt, adding to it the *blood* of the Slaughter-house, with *Lime*, as above; but this is also much too fierce for any present use, till it be perfectly diluted, which is a caution indispensably necessary, when ever you would apply such powerful affusions, lest it destroy and burn up, instead of curing and inriching. Another take as follows:

Rain-water of the *Equinox*, q. s. boil'd with store of *Neats dung*, till it be very strong of it, dissolve one pound of *Salt-Peter* in every pottle of water; whilst this is a little tepid, macerate your seeds for twenty four hours, dry them gently, rather with a cloth than by the fire; sow in the barreneſt Earth, or water Fruit-trees with it, for prodigious effects. Or thus: Take

Take two quarts of the ſame water, *Neats-dung*, as before, boil'd to the conſumption of half, ſtrain it, caſting into the percolation two handfuls of *Bay-ſalt*, and of *Salt-Peter and.* Another:

Take Rain-water, which has ſtood till putrified; add to it *Neats*, *Pigeon*, or *Sheeps-dung*, expoſe it for Inſolation a week or ten dayes, then paſs it through a courſe ſtrainer, infuſe more of the ſame ſoil, and let it ſtand in the Sun a week longer, ſtrain it a ſecond time, add to it *Common-ſalt*, and a little *Oxes Gall*, &c. Another:

Take *quick Lime*, *Sheeps dung* at diſcretion, put into Rain-water four fingers eminent; to ten pints of this Liquor, add one of *Aqua-vitæ*, macerate your Seeds, or water with it any lean Earth, where you would plant, for wonderful effects.

Infuſe three pound of the beſt

Indian Niter in fifteen Gallons of water, irrigate your barren Mould; 'twas successfully try'd amongst *Tulips* and *Bulbs*, where the Earth should by no means (as we have said) be forc'd by Composts. But a gentler than either, is,

A dilution of *Milk* with *Rain-water*, sprinkl'd upon unsleckt *Lime*, first sifted on your beds, and so after every watering the *Lime* repeated.

These, with divers more which I might superadd, not taken and transcrib'd out of Common Receipt-Books, and such as pretend to Secrets, but most of them experimented, I thought fit to mention; that upon repetition of Tryals, the curious might satisfie themselves, and as they have opportunity improve them, whilst perhaps, as to irrigations, less exalted liquors were more natural. And what if Essays were made

made of Liquors *per Lixivium*, the Plant reduc'd to ashes; might it not be more connatural, since we find by more frequent tryal, that the burning of *stubble* before the Rains descend on it, impregnates ground by the dissolution of its spermatic salts? I only name the naked *Phlegm* of Plants distill'd either to use alone, or extract the former salt; but I say, I only mention them for the curious to examine, and *ex abundanti*. For certainly (to return a little, and speak freely my thoughts concerning them) most exalted *Menstrues*, and (as they dignifie them with a great name) *Essentiated Spirits*; I say, all hasty motions, and extraordinary fermentations, though indeed they may possibly give suddain rise, and seemingly exalt the present vigour of Plants, are as pernicious to them as *Brandy*, and hot-waters are to Men; and there-

fore wherever these ardent Spirits are apply'd, they should be pour'd at convenient distances from any part of the Plant, that the virtue may be convey'd through some better qualified medium. But when all is done, waters, moderately impregnated and imbodied with honest *Compost*, and set in the Sun, are more safe, and I think more natural: For, as the Learn'd Dr. *Sharrok* truly affirms, Water is, of its own Constitution alone, a soil to Vegetables, not only as the most genuine *Vehicle* of the riches which it imparts to Plants, through the several strainers, and by means of which all change and melioration is effected; but for that it is of all other substances best dispos'd for ingression, to insinuate into, and fertilize the Earth, which is the reason that floated and irriguous grounds are so pregnant. Besides, it is of all that pretend

pretend to it, neareſt of blood (as I may ſay) to the whole *Vegetable* Family: For to aſſert with any confidence, what part of the meer Earth paſſes into their compoſition; or whether it ſerve (as we touch'd before) only for ſtability, or as a womb and receptacle to their *Seeds* and *Eggs* (for ſo we are taught to call the Seeds of Plants,) I ſhall not undertake to diſcuſs. Every body has heard of *Van-Helmonts Aſh-tree*; and may without much difficulty repeat what has been experimented by exquiſitely weighing the Mould before, and after a *Gourd* is planted in it, and till it be grown to bulk and full maturity, fed with water only; how much liquor is inſum'd, and how little of the Earth conſum'd, to make ſome conjecture; though I do not yet conceive the Earth to be altogether ſo dull and unactive, as to afford no other aid

to the Generation of what she bears; the diversity of soils being (as we have shew'd in this Discourse) so infinitely various, and the difference of invisible infusions so beyond our Arithmetic. But if we give *Liquids* prædominion, and at least the *Masculine* preference, be they *Salts*, or *Spirits* (that is, nitrous Spirits) convey'd into her bosome how they will; sure we are, that *Water* and *Vegetables* are much nearer of alliance, than either *Water* or *Air* are with the Earth and Mould. But neither do I here also by any means exclude the *Air*, nor deny its perpetual Commerce, and benign influences, charg'd as it comes with those pregnant and subtil particles, which insinuating into the Earths more steady and less *volatile Salts*, and both together invading the *Sulphur*, (and freeing them from whatsoever they find contumacious)

contumacious,) that inteſtine *fermentation* is begun and promoted, which derives life, and growth, and motion to all that ſhe produces. That by the *Air*, the moſt effete and *elixiviated* Mould comes to be repair'd, and is qualified to attract the prolific *nitrous* ſpirits, (which not only diſpoſes the Earth to this impregnating *magnetiſm*, but converts her more unactive and *fixed ſalts* into quite another genius and nature,) the Learned Doctor *Mayow* has ingeniouſly made out; and all this by a naked expoſure to the *Air* alone, without which it produces nothing: Nor can *Plants* (totally excluded from the *Air*) live, or ſo much as erect themſelves to any thriving purpoſe, as being depriv'd of that *breath* and vital *Balm*, which no leſs contributes to their growth and nouriſhment, than does the *Earth* it ſelf with all

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all our aſſiſtances: For that *Plants* do more than obſcurely *reſpire*, and exerciſe a kind of *Periſtaltic* motion, I little doubt, from the wonderful and conſpicuous attraction, and emiſſion, which ſome of them diſcover; particularly, the *Aloes*, and other *Sedums*, and ſuch as conſiſting of leſs cold and viſcous parts, ſend-forth their aromatic wafts at conſiderable diſtance.

Beſides, we find that *Air* is nearer of kin and affinity to *Water*, than water is to *Plants*, unleſs I ſhould affirm, that *Air* it ſelf were but a thinner water; for how elſe are thoſe *Vines*, and other Trees of prodigious growth, maintained amongſt the barren Rocks, and thirſty Pumices, where Rains but ſeldom fall? if not from this rorid Air. Not to inſiſt again, that perhaps even theſe Rocks themſelves may once have ſprung from liquid Parents,

Parents; and how little, even ſuch as are expos'd to continual ſhowers in other Climates, abate of their magnitude, ſince we rather find them to increaſe; and that alſo the Fruits and *Juices* of *Vegetables* ſeem to be but the concretion of better concocted *Water*, and may not only be converted into *lignous* and woody ſubſtance (as the Learned Doctor *Beale* has ſomewhere inſtanc'd in a Diſcourſe preſented to You, and Recorded in the *Public Tranſactions*) but is apt enough to *petrifie* and become arrant ſtone.

Whatever then it be which the *Earth* contributes, or whether it contain univerſally a *Seminal* virtue, ſo ſpecified by the *Air*, *Influences*, and *Genius* of the Clime, as to make that a *Cinnamon* Tree in *Ceilon*, which is but a *Bay* in *England*, is paſt my skill to determine; but 'tis to

to be obſerv'd with no little wonder, what *Monſieur Bernier* in his Hiſtory of the *Empire* of the *Magol* affirms to us of a Mountain there, which being on one ſide of it intolerably hot, produces *Indian Plants*, and on the other, as intemperately cold, *European* and Vulgar. Not here to paſs without notice at leaſt, what even the moſt exhauſted Mould will (to all appearance) produce ſpontaneouſly, when once it has been well expos'd to the Air, and heavenly influences; if what ſprings up be not poſſibly from ſome volatil rudiments and ſeeds, tranſported by winds, higher than we uſually place our Experiments, unleſs we could fix them upon *Olympus* top: But *Porta* tells us with more confidence, that he took Earth from a moſt profound and dry place, and expos'd it on ſuch an eminence,

nence, as to be out of reach even of the winds; but it produc'd, it ſeems, only ſuch Plants as grew about *Naples*, and therefore may be ſuſpected.

To return then again from this digreſſion, and purſue our *Liquids*; where there is good *Water*, there is commonly good *Earth*, and *vice verſa*; becauſe it bridles and tempers the *Salts*, abates the acidity and fierceneſs of *Spirits*, and imparts that uſefull ligature and connexion to the Mould, without which it were of no uſe for Vegetation. In the mean time, of all *Waters*, that which deſcends from Heaven, we find to be the richeſt, and propereſt in our work, as having been already *meteoriz'd*, and circulated in that great *digeſtory*, inrich'd and impregnated with *aſtral* influences from above at thoſe propitious Seaſons; whence that ſaying,

Annua

Annus fructificat, non Tellus, has just Title to a Truth we every years Revolution behold and admire, when the sweet Dews of *Spring* and *Autumn* (hitherto constipated by cold, or consumed with too much heat) begin to be loosened, or moderately condens'd, by the more benign temper of the Air, impregnating the prepared Earth to receive the *Nitrous* Spirits, descending with their baulmy pearls, yet with such difference of more or less benign, (as vapours haply, which the Earth sends up, may be sometimes qualified,) that nothing is more uncertain. And this we easily observe from the Labours of the Industrious *Bee*, and her precious *Elixir*, when for some whole moneths she gathers little, and at other times stives her waxen City with the harvest of a few propitious days. But I am gone too far, and there-

therefore now ſhall ſet down only a few directions concerning watring, and ſo diſmiſs the Subject and your patience.

1. It is not good to water new-ſown *Seeds* immediately, as frequently we do, and which commonly burſts them; but to let them remain eight and forty hours in their beds, till they be a little glutted with the natural juice of the Earth.

2. Never give much water at one time; for the ſurface of the Earth will often ſeem very dry, when 'tis wet enough beneath; and then the *Fibers* rot about *Autumn*, eſpecially in *Pots* and *Caſes*, winter'd in the *Greenhouſe*: To be the more ſecure, we have already caution'd *Gardners* to keep their bottoms hollow, that nothing ſtagnate and fix too long; which ſhould be but tranſitory. If ſuch Curioſities ſtrike no root by *September*, the

the leaves desert them certainly at *Spring*: The reason is want of *Air*, not moisture. Therefore in all intervals of severer frosts, and rigorous winter-weather, be sparing of refreshings, and unless you perceive their leaves to crumple up, and fall, (which is their language for Drink,) give them as sparingly as you can. Indeed, during the *Summer*, and when they are expos'd, they require almost perpetual irrigation, and that the liquor be well impregnat'd with proper Compost: But in hard Frosts, or foggy Seasons, watering your housed Plants indangers them by mustiness, and a certain Mill-dew which they contract. On the other hand,

Applications too *dry* create an intemperate thirstiness, and then they drink unmeasurably, and fall into *Dropsies*, *Jaundies*, *Feavors*, swell, languish and rot; and

and if the liquor prove too crude (as commonly it does, if taken from running and hungry fountains,) it extinguishes the natural heat, and obstructs the Pores; and therefore when ever you are constrain'd to make use of such drink, expose it first to the warm *Sun* for better concoction, infusing *Sheep*, *Pigeons*, or *Neats-dung*, to give it body: But though *Spring-water* be so bad, slow running *River* is often very good, and *Pond-water* excellent, so it be sweet; but all stinking pools, *mineral* and *bituminous* waters, are not for our use; and often good Air is as needful as good water; *Worms*, *Mouldiness*, *Cankers*, *Consumptions* and other Diseases, being the usual and fatal consequence of these vices.

If you be to plant in fresh and new broken-up Earth, and that the season or mould be too

dry, 'tis to be water'd; but then give it a competent sprinkling, or sifting of dry and fine mould upon what you have refresh'd, and then beating it a little close with the back of your spade, plant it successfully; for this you will find to be much better, than to water it after you have planted (as the custom is) and as you may observe in setting *Violets*, *Auriculas*, *Primroses*, and other *Capillaries*, planted in beds or bordures, and then dash'd with a flood of water, which, so soon as the *Sun* has look'd upon, relish and lose their tinctures, scorch and shrivel up. Lastly,

For the *season* likewise of this work, let it be towards the *Evening* in hot and summer dayes, for the reason immediately assign'd; for the moisture being in a short time drunk-up, deserts the Plant to the burning

Planet;

Planet; and hence it is, that *Summer miſts* are ſo noxious, and *Meridian watrings*; and therefore the beſt expedient is, upon ſuch exigencies, to pour your refreſhings rather all over the *Area* on which your *Caſes* of choice and rare ſhrubs are plac'd, and among the Allees and Paths between your Beds of *Flowers*, for the raiſing artificial *Dews*, (by which is unfolded no common ſecret;) or water them *per lingulam*, and *guttatim*, than either with the Pot or Bucket: And after this manner, if at other ſeaſons they ſtand in need of heat and comfort of warmth, by ſtrewing *Sand* or *Cinders* on the ſame intervals, the reflection will recreate them, upon all emiſſions of the Sunbeams.

As for groſſer Plantations, and Trees of old *Orchard-Fruits*, moderation is alſo to be obſerv-

ed, and not to daſh on ſuch a quantity near the ſtem and body; but firſt with the ſpade to looſen the Earth about them, eſpecially towards the extremities of the tendereſt Roots, which generally ſprout at the ends of the moſt woody, whoſe mouths are ſhut with tougher bark. Theſe therefore may be cut ſloping to quicken them a little, and make them ſtrike freſh fibers; eſpecially if ſome rich and tempting mould be ſeaſonably apply'd: For Trees will (as we ſhew'd) with very little Earth to cover them, take faſt root, (provided you ſtabliſh them againſt impetuous winds, ſhocks and accidents of force,) and thrive exceedingly with this refreſhment.

Some make pretty large holes with an Iron-*Crow*, or (which is better) a pointed ſtake, and pour the liquor in at thoſe overtures;

tures; but beſides, that by this means they wound the roots, (which *gangrenes*, and ſometimes kills the Tree,) if the holes be not fill'd, the Air and Moiſture mouldies them: So as, when all is ſumm'd together, there's nothing comparable to frequent ſtirring up the Ground, opening the dry clod, and watring upon that; and if you lay any *fearn-brakes* or other traſh about them to entertain the moiſture, and skreen it from the heat, let it not be wadded ſo cloſe, or ſuffer'd to lie ſo long, as to contract any muſtineſs, but rather looſe and eaſie, that the Air may have free intercourſe, and to break the more intenſe ardours of the ſcorching Sun-beams.

Thus I have exercis'd Your Lordſhips and theſe Gentlemens Patience with a dull Diſcourſe of *Earth*, *Mould* and *Soil*; but, I truſt

I truſt, not altogether without ſome Fruit; or, at leaſt, not improperly *pro hîc & nunc*, as the Subject has Relation to what has ſo lately been produc'd, and with happy event made out, by thoſe Learned Perſons, who have entertain'd this *Noble Society* with the *Anatomy* of *Plants*.

ERRATA.

Pag. 49. l. 22. r. un-uniform.

FINIS.